

Tell them we don't want to leave...

The Marshall Islands and the Rising Sea

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Acknowledgements – *This work was supported by the National Socio-Environmental Synthesis Center (SESYNC) under funding received from the National Science Foundation DBI-1052875.*

Part 1: Introduction to the Marshall Islands

Listen to the voice of a Marshallese woman, Kathy Jetnil-Kijiner:

<http://jkijiner.wordpress.com/2011/04/13/tell-them/>

Look at Map 1, Oceania, and find the Marshall Islands. Look at Map 2, the Republic of the Marshall Islands. The Republic of the Marshall Islands (RMI) consist of over 1,200 islets in 29 atolls scattered across $\frac{3}{4}$ million square miles of ocean. That's an area three times larger than the state of Texas. The average height above sea level is 2 meters (7 feet). The highest elevation, found on Likiep Atoll, is 6 meters. The atolls are coral rims that partially or completely surround a lagoon. Often the atolls also are fringed by coral reefs which serve as the atolls' defense against ocean surge. The water over these reefs, however, is often only a few feet and sometimes only a few inches.

Two parallel chains are formed by the twenty-nine main atolls and five islands. These chains are called the "Ratak" (sunrise, the eastern chain) and "Ralik" (sunset, the western chain). The two places with the largest population are Majuro, where the capital is located, in the Ratak chain and Kwajalein, where the US military base is located, in the Ralik chain. According to a census conducted in 2011 (EPPSO 2011), slightly more than 53,000 live in the RMI. Of that total, 74% of the population now resides on these two major atolls. Majuro has the larger population, with about 28,000 living on 9.71 km² (3.7 square miles). When uninhabitable land is taken into account, the average population for 23 islets (those with at least 10 households) was 3,600 people per square mile. By way of comparison, Hong Kong's population density in the same timeframe was around 2,500 people per square mile. On Ebeye (part of Kwajalein) the population density is 82,000 per square mile; Rita and Delap, two communities found on Majuro, have a population density of around 38,000 and 16,000 respectively.

Humans have been living on the Marshall Islands for a long time; some archeological findings suggest Bikini Atoll may have had human inhabitants 4,000 years ago. However, by 1494, European colonization reached the RMI and control of all of Micronesia went to Spain. A British captain named William Marshall sailed through these particular islands in 1788 and provided the name now used for this collection of atolls and islands.

In the late 1800s, Germany annexed the Marshall Islands from Spain and established a protectorate. In 1914, Japan captured the islands from Germany; until World War II, Japan would remain in control of the islands. In 1943, the Allies invaded the Marshall Islands and in 1944 occupation began. In 1945, control of the islands was given over to the US. In 1946 the United States began its nuclear testing program, beginning with tests at Bikini. By 1954, the most powerful hydrogen bomb ever tested by the US was detonated on Bikini atoll. Marshallese and US military living on Rongelap, Rongerik, Utirik and Ailinginae had to be evacuated because of the radiation. Although some Rongelapese tried to return to their island, they were too afraid of more contamination to stay more than a few years.

Beginning in the late 1970s, efforts to establish the independence of the Marshall Islands are evident. In 1983, voters in the RMI (officially named in 1982) vote to enter into the Compact of Free Association with the

US. This Compact was approved by the US Congress in 1986 and in 1990 the UN terminated the RMI's trusteeship status, making it a completely independent nation.

In the 1950s, the population of the Marshall Islands began increasing rapidly. This was largely because of improvements in health, education and employment available on Majuro and Kwajalein as these atolls urbanized. On these atolls, population grew because of natural increase (more births than deaths) as well as migration from the rural, outlying atolls. Population growth rates have declined in more recent years, primarily because of out-migration to the United States. Because of the Compact of Free Association, citizens of the RMI are free to travel to and from the US without restriction and may remain in the US legally as long as they would like.

Although some of the outlying rural atolls of the RMI appear to be idyllic places to live, the people of the RMI face substantial hurdles in terms of social and economic development as well as environmental crises ranging from drought to climate change impacts. The two largest atolls, Majuro and Ebeye, continue to have rising populations and have already outstripped the natural resource base of the atolls. These urbanized populations are dependent on imported foods and goods. Poverty, unemployment, adult obesity, non-communicable diseases, teenage pregnancy, suicide, alcoholism, and tobacco use are all high. Migration to Springdale, AR, started in the mid-1980s and as a result, the largest population of Marshallese outside the islands is now found in Springdale. Although Marshallese now migrate primarily to find employment, better health care, and better educational opportunities, the environment of the islands is becoming a more important factor as it is not clear if the Marshallese people will be able to continue to inhabit their traditional lands.

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Definition of a socio-environmental system: Tightly linked social and biophysical subsystems that mutually influence one another. Example: human behaviors, decisions, and policies influence the status of ecosystems (e.g., water quality) that, in turn, influence human beings' quality of life and future decisions.

Source: <http://www.sesync.org/socio-environmental-systems>

A concept map links ideas or concepts to one another and shows how they are related.

In-class assignment: working in pairs, create a concept map for the social-environmental system of Majuro atoll (<http://cmap.ihmc.us/> or by hand). Look at the sample concept maps in the Supplemental Files.

Homework 1 assignment:

Watch "Climate Change 101 with Bill Nye, the Science Guy" at

http://www.smithsonianmag.com/videos/category/3play_1/climate-change-101-with-bill-nye-the-science/?no-ist

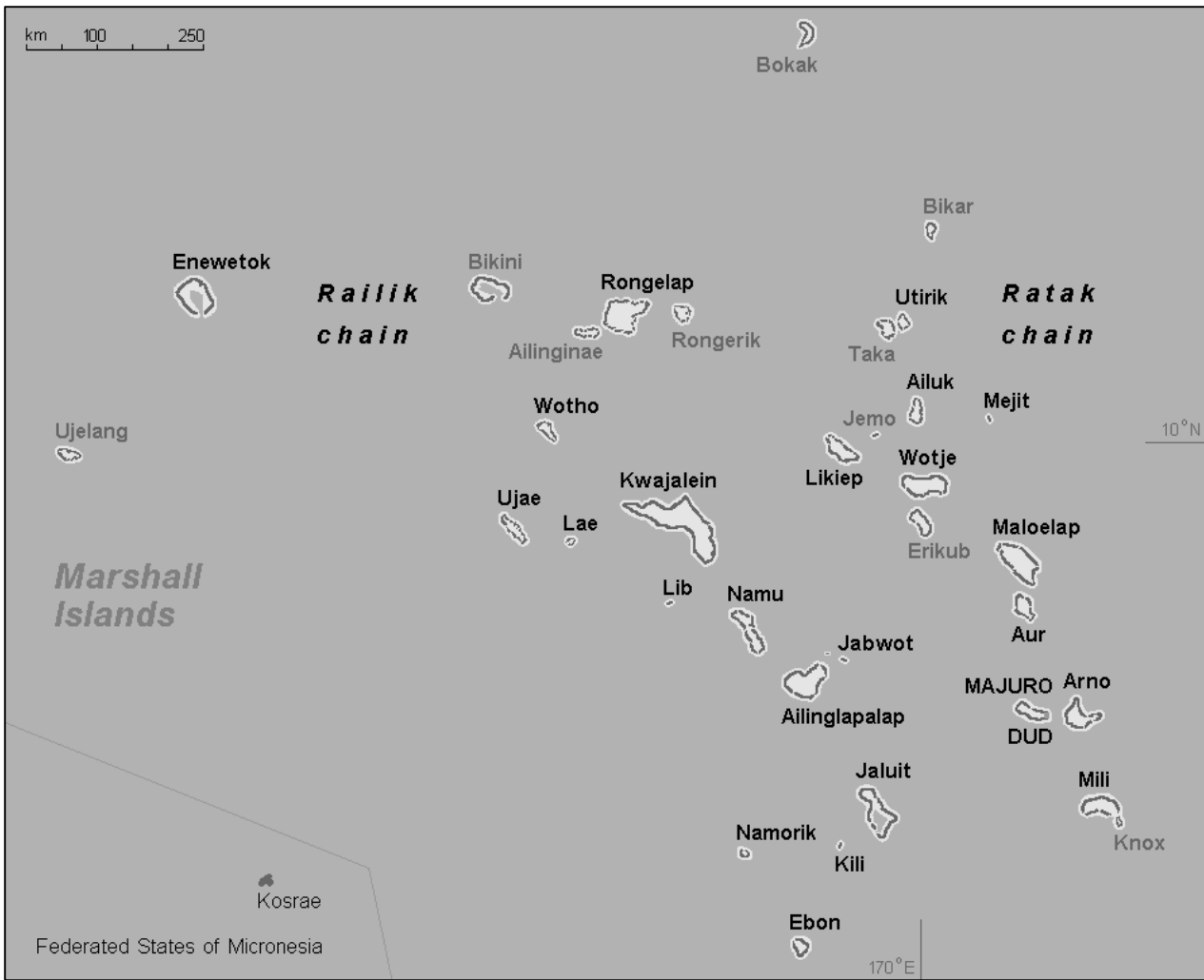
Read "Climate Change Science Overview" at <http://www.epa.gov/climatechange/science/overview.html>

Read "Sea Level Rise" (found at <http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/>) and "Oceans & Sea Level Rise" (found at <http://www.climate.org/topics/sea-level/>)

Answer the questions for Homework 1 located in the Supplemental files.



Map 1. Oceania (from http://www.lib.utexas.edu/maps/australia/oceania_ref_2012.pdf)



Map 2. Map of the Republic of the Marshall Islands. Behr, 2010.

Part 2. Demography – is it destiny?

Take a look at Map 3. Locate the approximate location of Arkansas as well as the Marshall Islands. What would you estimate the distance to be between Arkansas and the Marshall Islands? What route do you think people from the Marshall Islands travel to get to Arkansas? Based on your homework assignment, mark the areas of the globe where the trend of sea level change has been greatest.

Watch this video on a recent “King Tide” in the Marshall Islands:

<https://www.youtube.com/watch?v=B4abshci7rY>

The spring tides in March of this year were not particularly strong, as noted in the video. Higher sea levels, however, did contribute to the flooding and infiltration. Understanding both social and environmental data is needed to address existing problems and plan for future events. In this section of the case study, you will grapple with demographic data to begin to understand the scope of the problem for the Marshallese people.

Population change occurs through three processes: births, deaths, and migration. Births add people to the population while deaths remove people from the population. Migration adds people when they move into an area (in-migration) but subtracts people when they move out of an area (out-migration). The basic formula for population change, or the difference in population between one time (T1) and another time (T2) is

Population at T2 = population at T1 + births - deaths + in-migration – out-migration

Natural increase or decrease is defined as births – deaths; the sum is called *natural increase* if the number of births is greater than the number of deaths; the sum is called *natural decrease* if the number of deaths is greater than the number of births. *Net migration* is the number of people moving in minus the number of people moving out. *Net migration* is negative when more people move out than move in and positive when more people move in than move out.

Homework 2 assignment:

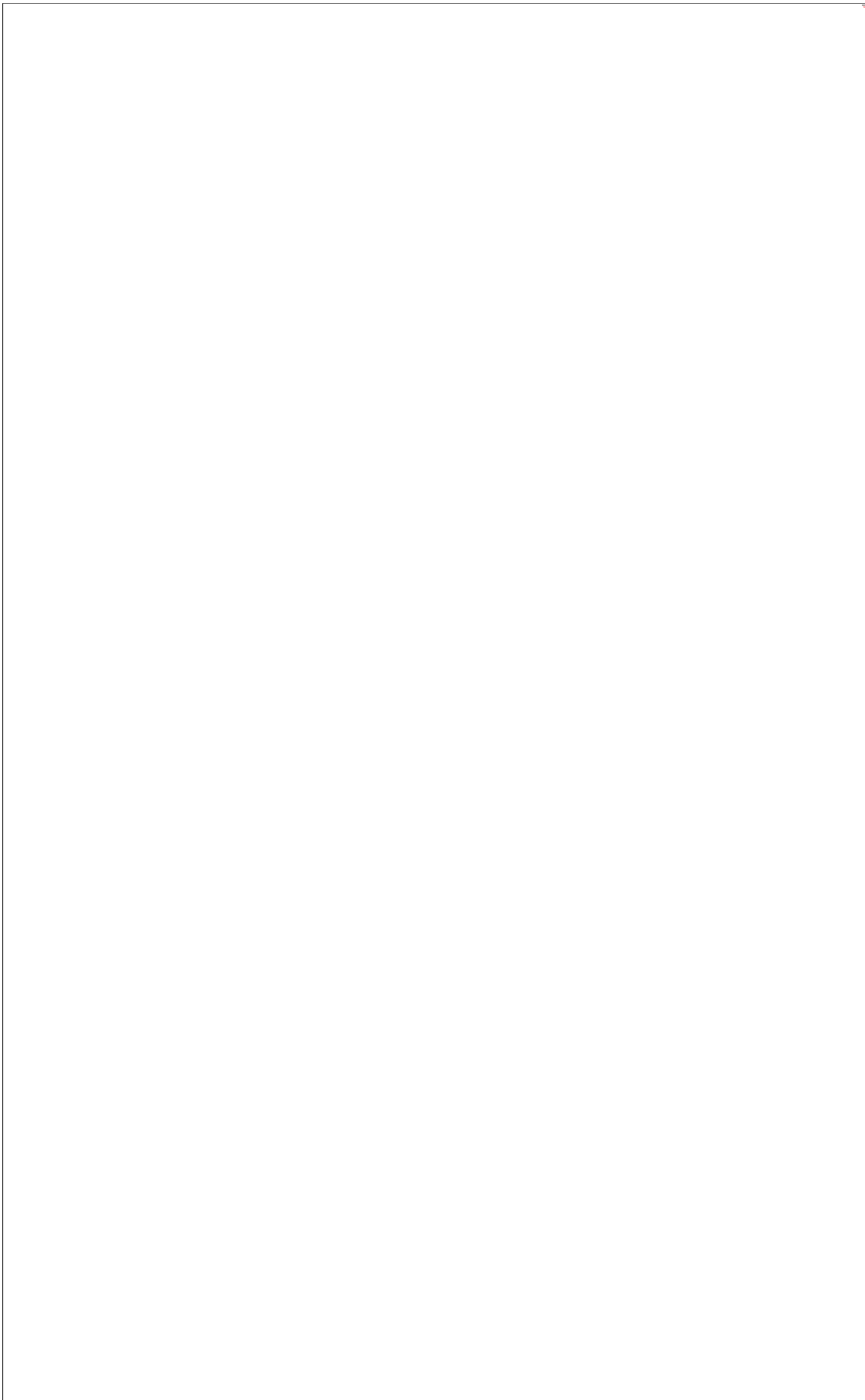
Look at the information in Table 1 for the Marshall Islands and Springdale. Using the basic demographic formulas and definitions above, answer the questions in Homework 2.

Based on your conclusions from Homework 2, name three problems facing the Republic of the Marshall Islands government and three problems facing the Springdale, Arkansas government based on both demography and the environment. Add these problems to your homework answer sheet.

Watch this video of Marshallese in Springdale: <https://www.youtube.com/watch?v=iiLhduZDr9Y>

Read <http://www.nytimes.com/2012/07/05/us/for-marshall-islanders-hopes-and-troubles-in-arkansas.html>

Read: <http://ajph.aphapublications.org/doi/pdfplus/10.2105/AJPH.91.9.1371>



Map 3. Political map of the world, 2012

Table 1. Demographic data

Variable	Majuro	Springdale
Year of data	2011	2012
Land area, square miles	3.75	31.3
Population total	27,797	73,588
Population density (persons per square mile)	7,413	2,336
Percent females	48.8%	50.3%
Population increase since 1999	2,318	22,668
Percentage increase	4.6%	48.1%
Percent children under 5	14.5%	10.3%
Percent people over 65	2.0%	8.8%
Median age of population (years)	20.6	29.1
Average household size	6.7	2.5
Median size of housing unit, square feet	399.0	2184.0
International in-migration (2006-2011)	1,142	2,465
International out-migration (Marshall Islands as a whole) 2013*	9,684	--
Domestic net migration (2006-2011)	598	23,590
Births in past year	1,705	3,205
Deaths in past year	197	1,260
Population 25 years and older, high school graduate	24.8%	69.7%
Population 25 years and older, some college and higher	18.1%	39.8%

Sources for Majuro: Republic of the Marshall Islands, 2011 Census Report. 2012. Economic Policy, Planning and Statistics Office, Republic of the Marshall Islands, and the SPC Statistics for Development Programme, Noumea, New Caledonia. *UNICEF Migration Profile (found at <http://www.un.org/en/development/index.shtml/desa/index.html>)

Sources for Springdale: American Community Survey, 2008-2012, U.S. Census Bureau; American FactFinder Quick Facts for Springdale, Arkansas; U.S. Census Bureau Median and Average Square Feet of Floor Area in New Single-Family Houses Completed by Location (U.S. South Region value shown); Population Estimates 2013, Deaths, Births and Migration, U.S. Census Bureau

Part 3. The future of the Marshallese

Many of the problems facing the Marshallese are not of their own making. The Marshallese were not genuinely consulted about nuclear testing nor have they been the primary cause of sea-level rise. But the Marshallese are not simply victims; they have *agency* (capacity to act independently and make their own choices) even if that agency is limited. The Marshallese government has been active at a number of different global and regional gatherings, trying to move the world community to action on climate change.

Kathy Jetnil-Kijiner was selected to be the keynote speaker at the Climate Summit in New York on September 23, 2014 (<http://thinkprogress.org/climate/2014/09/23/3570736/kathy-jetnil-kijiner-marshall-islands-un-speech/>). She addressed more than 100 heads of state in an effort to raise awareness of the issues and threats to her people. She has also created an NGO (non-governmental organization) called Jo-JiKuM which is aimed at “empowering the youth of the Marshall Islands about issues related to environmentalism and climate change and the impacts it has on our lives.” You can watch that speech here:

(<http://www.un.org/climatechange/summit/2014/08/climate-summit-hear-marshall-islands-poet/>)

In small groups, discuss the following questions:

1. Which individuals or groups could change what is happening on the Marshall Islands with respect to
 - a. Climate change
 - b. Sea-level rise
 - c. Nuclear radiation
 - d. Poverty
 - e. Economic development
 - f. Environmental protection or conservation
2. What social or environmental justice issues face the Marshallese people? What individuals or groups are responsible for addressing these justice issues?

Refine your concept map based on what you have learned to this point. Indicate on your concept map (by drawing and/or writing), the point(s) in the social-environmental system you believe interventions could be made to address the concerns facing the system. Turn this in.

Homework 3 assignment:

Listen (or read) again to the voice of a Marshallese woman, Kathy Jetnil-Kijiner:

<http://jkijiner.wordpress.com/2011/04/13/tell-them/>

Write a 1-2 page essay entitled “What I would say to Kathy Jetnil-Kijiner if I had the opportunity.” In her poem, she tells the listener to “Tell them....” Casting yourself as one of “them”, use personal reflection to respond to the poem. Be sure to demonstrate the importance of understanding the components and connections of the social-environmental system in answering the poet’s challenges to “them”.

Your essay should demonstrate what you have learned throughout the case study. Use concepts and information provided to write an educated, not merely emotional, response. Demonstrate synthesis of the social and environmental data and concepts in application to a real-world problem. Essay should include at least 2 specific ideas or recommendations and provide justification based on information from the case study.