

A VIEW OF THE OUTER ATOLL ECONOMY

By Kevin Hart

A. The Pattern of Population Growth and Migration in the Outer Atolls

In 1948, 76% of the population lived on the “rural” outer atolls of the Marshall Islands. Fifty-two years later, in 1999, only 30% of a much larger total RMI population lived there, the remainder residing in the two “urban centers” of Majuro and Kwajalein Atolls and on Kili Island and Enewetak Atoll. Changes in the distribution of population between rural and urban atolls are reflected in the data in Tables 1 and 2 and Figure 1 below. Note that outer atoll population figures in this analysis exclude inhabitants of Enewetak and Kili because migrations to and from these areas were not principally a function of normative economic considerations common to the other outer atolls of the Marshall Islands.

**Table 1:
Rural vs. Urban Population: 1948-1999**

Census year	Population		Percentage	
	rural	urban	rural	urban
1948	7,362	2,364	76%	24%
1958	8,761	4,699	65%	35%
1967	9,261	8,789	51%	49%
1973	8,325	15,759	35%	65%
1980	11,192	18,415	38%	62%
1988	13,078	28,975	31%	69%
1999	14,657	34,578	30%	70%

Sources: Department of the Navy, *Handbook on the Trust Territory of the Pacific Islands*, 1950; RMI Statistical Abstract, 1995; RMI 1999 Census.

**Table 2:
Rates of Population Change
by Census Period**

Census periods	Annual Change over census periods	
	rural	urban
1948-58	1.8%	7.1%
1958-67	0.6%	7.2%
1967-73	-1.8%	10.2%
1973-80	4.3%	2.2%
1980-88	2.0%	5.8%
1988-99	1.0%	1.6%
1948-99	1.4%	5.4%

Sources: Same as for Figure 1.

Several factors reduced the apparent rate of annual population growth in the urban atolls from 10.2% between the 1967-73 censuses to 2.2% between 1973-80.

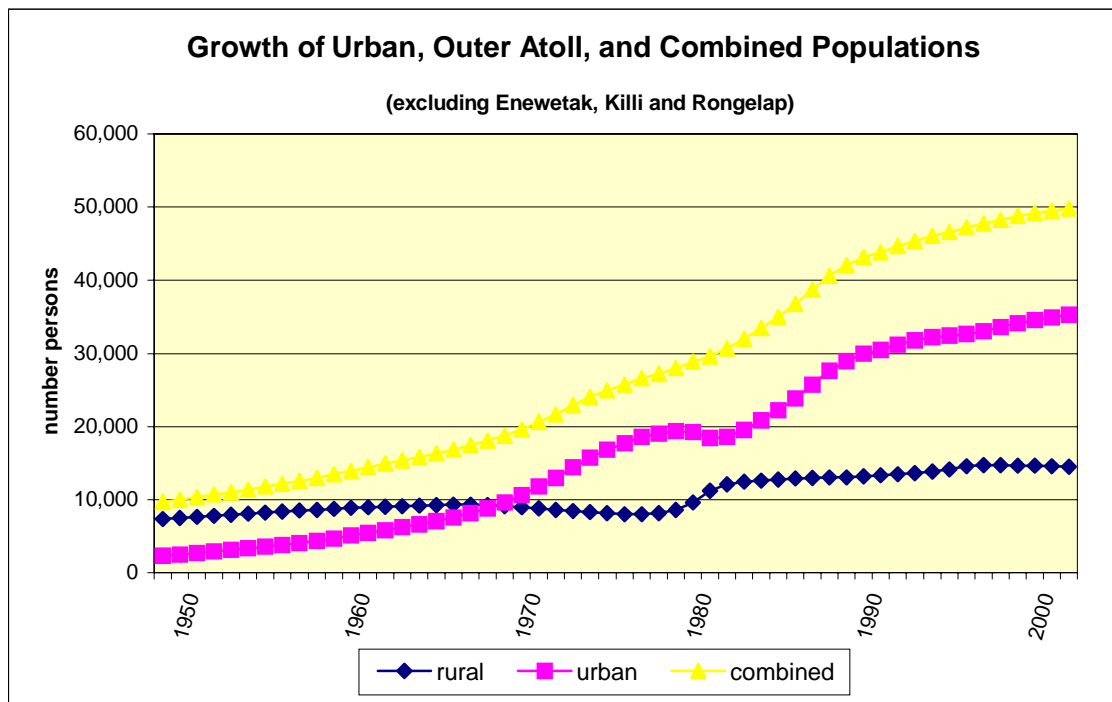
- The growth of the urban economies had begun to stall by the mid-1970s, the rapid increases in U.S. spending during the 1960s having attained a plateau of

about \$20 million by 1970. Many urban immigrants, unable to find employment, began to move back to their home atolls.

- The government-funded Tobolar copra processing plant started operations in 1978. Long promised as a panacea for the declining copra industry, many outer islanders had remained at their home atolls in anticipation of a boom in copra prices. The price did increase dramatically to \$940/ton¹ in 1979 from \$445/ton during the three previous years, but dropped back to the previous level in 1980, after which it drifted downward to under \$200/ton in 1991.
- In December 1979, a devastating flooding of Majuro, caused by huge ocean swells, rendered 10,000 people homeless and drove hundreds of unemployed migrants back to their home atolls during 1980.
- Demographers generally regard the 1980 census as an undercount, possibly because of the chaos in Majuro that year, where thousands lived among half a dozen makeshift 'tent towns' after the flooding.

Between the 1980-88 censuses, however, the urban growth rate began to increase again, climbing to 5.8% annually as significantly higher levels of funding from the Compact of Free Association began to flow to the newly affluent national government. The Trust Territory program of concentrating spending in Majuro and Kwajalein continued even as the price of copra, the mainstay of outer atoll economic life, kept dropping, and migration to the urban areas resumed. The rates of change and relative proportions of urban and outer atoll populations are depicted in Figure 1.

Figure 1



¹ All dollar amounts in this report are adjusted for inflation to their approximate equivalent in 2001 dollars. Inflation factors were derived from a composite of the US Department of Labor Consumer Price Index, the RMI Consumer Price Index and *Trust Territory Annual Reports to the United Nations* (1958-1977).

Sources: Department of the Navy, *Handbook on the Trust Territory of the Pacific Islands*, 1950; RMI Statistical Abstract, 1995; RMI 1999 Census.

Over the 52-year period between 1948 and 1999, rural population doubled from 7,361 to 14,657 while urban population increased by a factor of 13.6, from 2,364 to 34,578. But these numbers alone do not describe the full impact of migration from the outer atolls.

A considerably greater proportion of those who, by virtue of their age, are largely dependent on the productivity of others for their support reside on the outer atolls. According to the 1999 RMI Census, 51.3% of persons living on the outer atolls are between the ages of 0 and 14 years or are older than 59 years, compared to 43.8% at the urban atolls, a differential of 17%. This differential highlights a consequence of the migration of the most productive members of the society to the urban areas.

The establishment of public and private high schools in Majuro drew most of the best-qualified elementary students from the outer atolls. They became accustomed to enjoyment of the physical amenities and economic opportunities of urban life while in Majuro. The vast majority of them chose to reside there or at Kwajalein following graduation. Their high school diplomas and enhanced English language skills gave them easy entry into government and private sector employment.

In contrast, there were few amenities or opportunities for economic gain in the outer atolls. A handful of government jobs on their home atolls as teachers or health aides drew some graduates back there, but rather than face a lifetime of economic insecurity cutting copra, nearly all elected to seek jobs at the urban locations. Had there been stronger incentives for the better-educated students to return home, the economic and political potential of the outer atolls might have been more fully realized.

B. Profile of the 19 Outer Atolls and Islands Analyzed in This Study

The following analysis focuses on the 16 atolls and 3 islands (hereafter referred to collectively as “the outer atolls”) whose economies have benefited least from outside assistance or compensation programs, thereby excluding the “urban centers” of Majuro and Kwajalein and the “nuclear-affected atolls” of Kili/Bikini, Enewetak, and Rongelap because of the high level of prosperity there relative to the other locations. Utirik Atoll, although nuclear-affected, fits the group’s profile on most other measures and so is included in the analysis.

These nineteen outer atolls comprise 47.25 square miles of dry land and are inhabited by a population of about 14,500 persons at present. Average household size is 7.4 persons and average population density is 373 persons per square mile. For comparison, household size at the other four atolls averages 8.3 persons and average density is 2,900 per square mile.

Dividing the mid-point value of income categories used in the 1999 Census by the number of persons in those categories yields an average per capita income figure for these 19 outer atolls of \$424, ranging from \$87 on Lib Island to \$693 at Jaluit Atoll and \$273 at Ailiniplap, with a median of \$480. Mean per capita calculated in the same manner for the urban and nuclear-compensated atolls was \$2,426 and \$1,425, respectively. Using this method, national per capita is \$1,395.

Table 3 compares physical and economic characteristics of these 19 outer atolls and islands to each other and to those of the four urban and nuclear-affected atolls. Principal data is from the RMI 1999 Census.

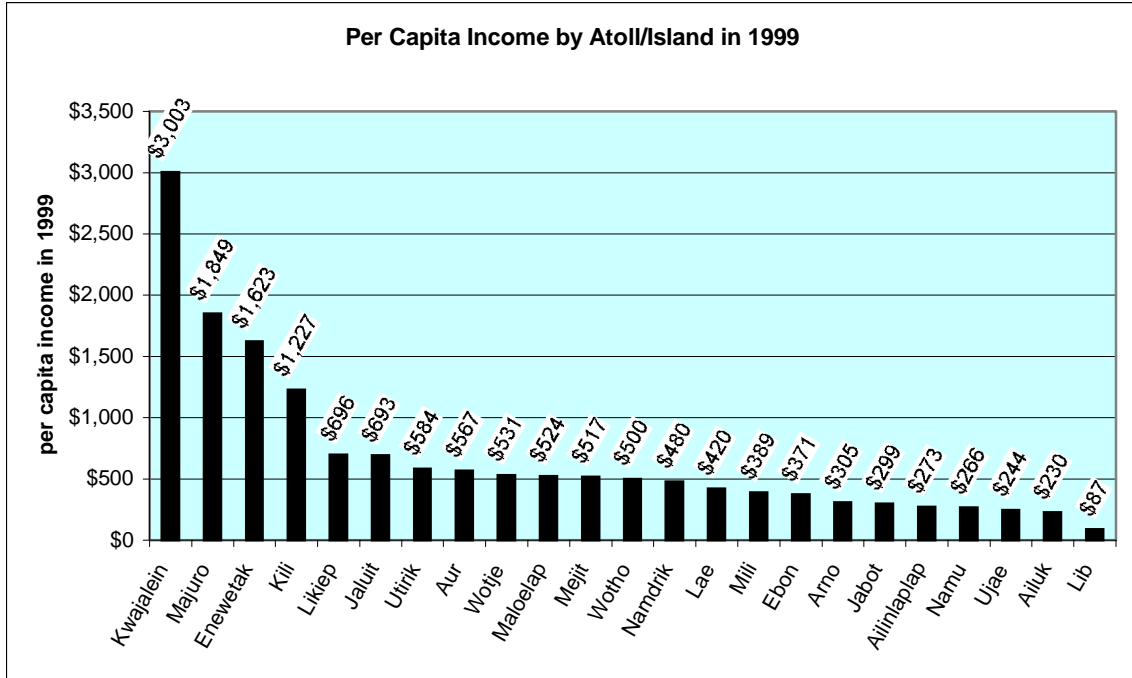
Table 3: Comparison of 19 Outer Atolls to 2 Urban and 2 Nuclear-affected Atolls

Atoll/ Island	Population (1999 Census)	Persons per household	Density/ square mile	Land (square miles)	Lagoon (square miles)	Latitude (degrees north)	Miles from Majuro	Median Household Income	Per Capita Income
Arno	2,069	8.5	414	5.0	131	7.07	30	\$1,965	\$305
Ailinlaplap	1,959	8.3	346	5.7	290	7.40	150	\$893	\$273
Jaluit	1,669	7.2	381	4.4	266	6.03	130	\$3,486	\$693
Mili	1,032	7.6	168	6.2	295	6.17	60	\$1,120	\$389
Namu	903	7.1	373	2.4	154	7.97	210	\$836	\$266
Ebon	902	7.4	406	2.2	40	4.63	220	\$1,048	\$371
Wotje	866	8.0	274	3.2	241	9.43	160	\$3,062	\$531
Maloelap	856	6.2	226	3.8	376	8.65	115	\$1,741	\$524
Namdrik	772	6.5	721	1.1	3	5.63	215	\$1,501	\$480
Aur	537	6.2	247	2.2	93	8.27	70	\$2,189	\$567
Likiep	527	6.4	133	4.0	164	9.92	205	\$2,272	\$696
Ailuk	513	5.8	248	2.1	69	10.33	205	\$679	\$230
Ujae	440	6.6	611	0.7	72	9.05	350	\$728	\$244
Utirik	433	6.7	461	0.9	22	11.47	265	\$3,461	\$584
Mejit	416	6.9	578	0.7	---	10.13	200	\$2,410	\$517
Lae	322	10.1	575	0.6	7	8.93	320	\$2,891	\$420
Wotho	145	8.1	87	1.7	37	10.10	365	\$2,983	\$500
Lib	141	9.8	408	0.4	---	8.32	245	\$666	\$87
Jabot	95	6.3	432	0.2	---	7.75	132	\$888	\$299
means	768	7.4	373	2.5	141	8.28	192	\$1,833	\$424
Majuro	23,676	7.7	6,314	3.8	114	7.13	0	\$9,030	\$1,849
Kwajalein	10,902	9.0	2,760	6.3	839	9.08	235	\$14,195	\$3,003
Enewetak	853	7.8	377	2.3	388	11.51	595	\$10,750	\$1,623
Kili	774	8.6	2,150	0.4	---	5.63	160	\$8,114	\$1,227
means	9,051	8.3	2,900	3.2	447	8.34	248	\$10,522	\$1,926

Source: 1999 RMI Census

Per capita income at the 23 atolls in Table 3 are depicted in Figure 2 below.

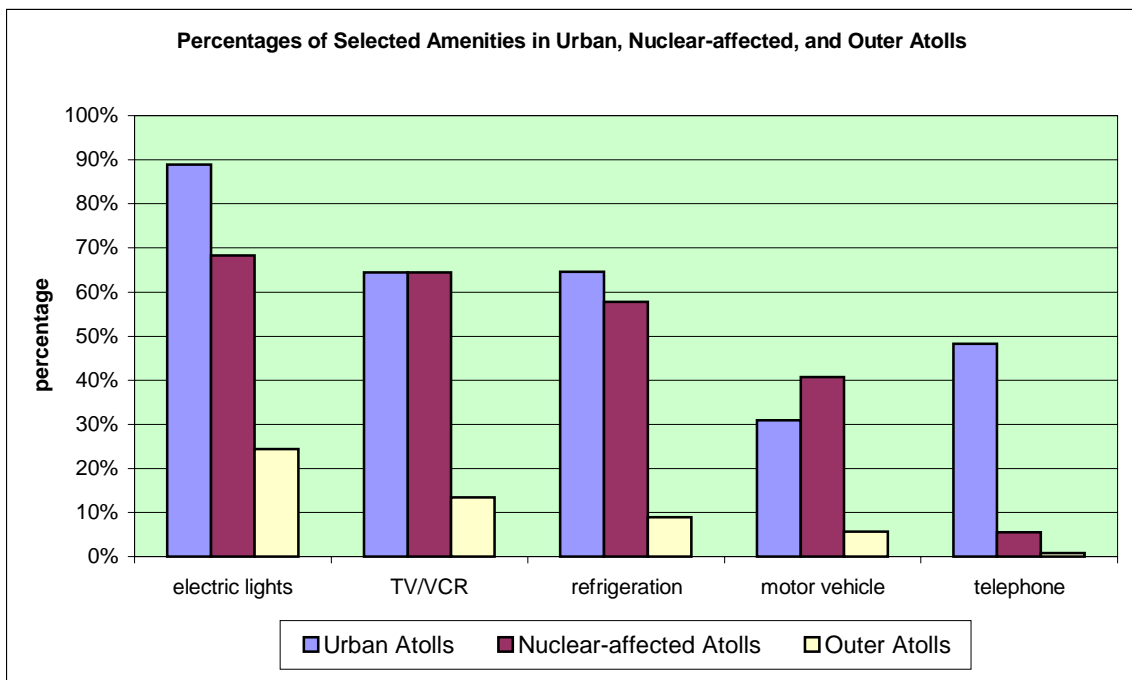
Figure 2



Source: RMI 1999 Census

Figure 3 shows the distribution of household amenities in each of these groups.

Figure 3



Source: RMI 1999 Census

C. Copra: Faltering Foundation of the Outer Atoll Economy

For the vast majority of outer atoll residents, the production of copra continues to be their principal source of cash income, following a pattern established nearly 150 years ago. The introduction of copra making by European traders was the first time Marshallese had encountered a system where they could trade a product formerly of little consequence to them for products of inestimable value in easing the burden of survival. When copra became a medium of exchange for foreign imports, the overabundance of coconuts on every island became a medium of good fortune for their inhabitants.

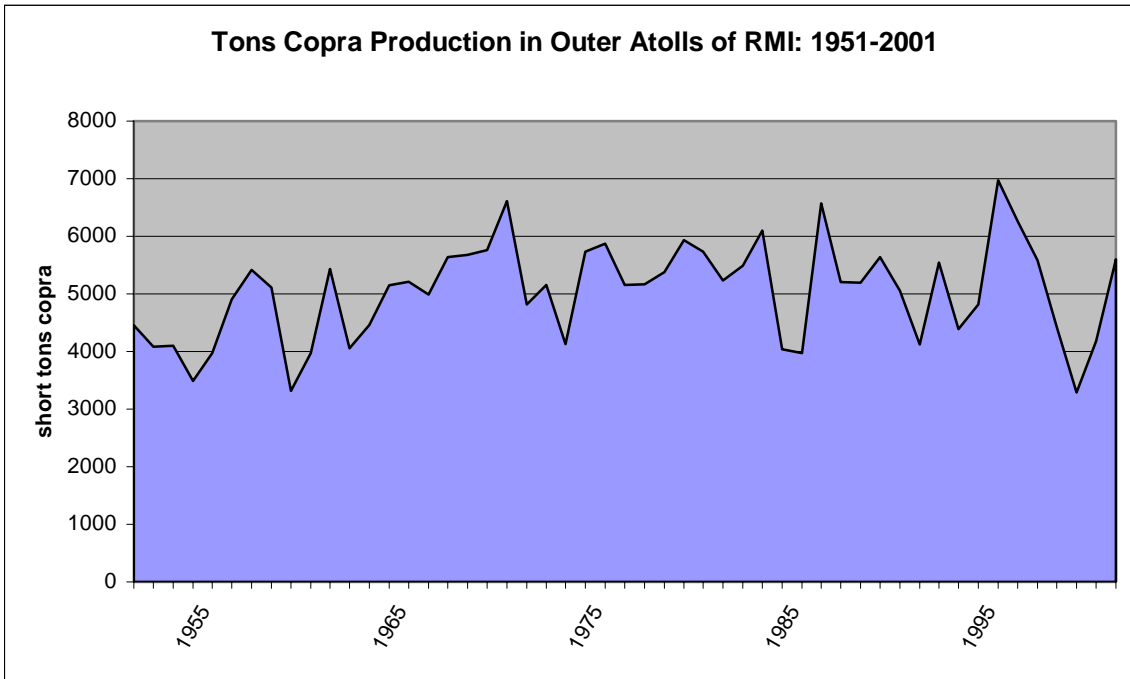
With income earned from copra, Marshallese were able to acquire steel cutting tools and cooking vessels, matches and kerosene lanterns, and easily prepared foods like rice and flour. These and other imported products were instrumental in changing the way they lived in fundamental ways. Their ancient political system, where the division of chiefs and commoners was absolute, was modified by the introduction of an intermediate political class, the alabs or "land managers," which endures today, serving an important economic, political and social function in the culture. The alabs were (and are) senior family members who were given responsibility by the chiefs to ensure that their families produced copra. Not only was the pattern of everyday household life changed by the copra industry, but the topography of the islands themselves was altered when interior virgin forests were cut down for replanting with coconut palms.

Because it was so plentiful relative to population in the Marshalls, copra provided a standard of living that other Pacific Island groups envied for well over a century. When the question of changing the political status of Micronesia from the Trust Territory (TT) was debated in the Congress of Micronesia in the early 1970s, a key issue was how tax revenues from copra produced in the Marshalls (40% of the total production of the TT), at that time the most important export product of the area by far, would be shared among the various districts of Micronesia. The inability of the Congress to find a formula for this satisfactory to the Marshalls was one of the reasons they asked the United States for a separate political status.

Coconut palms produce only so many nuts each year. In the Marshalls, the maximum workable yield in an average year is about 6,500 tons. Actual average copra production on the outer atolls, however, has been 5,230 tons annually over the past 30 years due to household use of ripe coconuts, low prices, infrequent shipping, and adverse weather conditions. Production levels in Figure 4 represent tonnages of copra delivered to Majuro for each year since 1951.

The price of copra, relatively stable for over a century, has been in decline world-wide compared to most other agricultural commodities over the past 25 years, due in part to substitutions for coconut oil of other, less expensive soybean and sunflower oils. Prices after 1986 would have been substantially lower had the RMI government not introduced subsidies that became effective in 1987. Figure 5 below shows how copra prices in RMI, corrected for inflation and including subsidies, have varied over the past 53 years.

Figure 4



Source: RMI Statistical Abstracts 1989/90, 1993/94, 2000; RMI Office of Planning and Statistics, 1985.

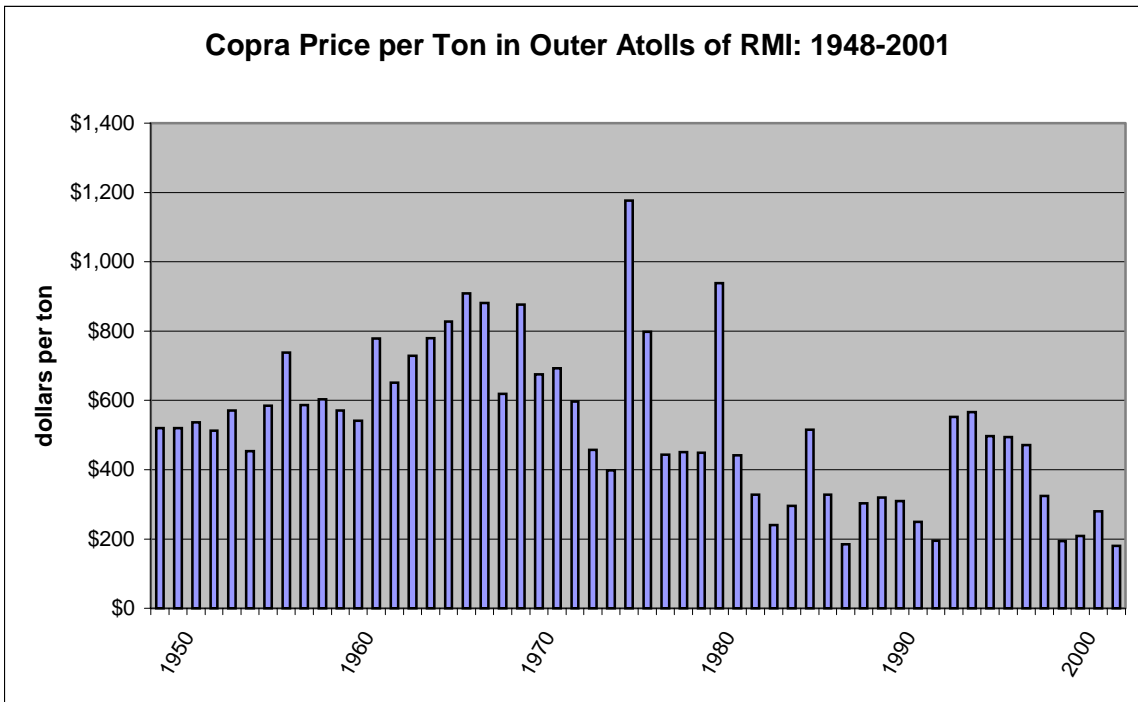


Figure 5 Sources: Robert Nathan Associates, *Economic Development Plan for the Trust Territory of the Pacific Islands*, 1966; RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts, 1989/90, 1992/94, 2000; Tobolar.

The U.S. Navy began purchasing copra late in 1946 for \$600/ton, the average price paid over the 35-year period ending in 1980. Annual per capita income from copra for these years is calculated to have averaged \$375.

World market demand for copra, and hence, its price, had begun to weaken and become more volatile during the 1970s. Growing global awareness of the highly unsaturated fat content of coconut oil and the health hazard this implied further lowered demand in the 1980s since coconut oil had been widely used as an ingredient in many processed foods. After so many generations as a stable feature of atoll life, the decline in value of copra began a 20-year downward spiral in standard of living for outer islanders.

Following the October 1973 war in the Middle East, the price of copra skyrocketed to an all-time high of nearly \$1,200/ton in 1974 when petroleum supplies dried up after establishment of the Arab oil cartel. For a brief period, coconut oil was substituted for certain petroleum-based products because it had become more cost effective. In 1974, per capita copra income in the Marshalls reached an all-time record of \$830 per person, more than twice the average for the previous decade.

Migration from the outer atolls, even at its high rates between 1960 through 1975, appears to have had no negative effect on copra production. During this period, annual production averaged 5,245 tons, an increase of 22% over the previous decade. It is important to note that there have never been enough coconuts in the outer atolls for copra making to be a full-time occupation, so there were still plenty of people available for this work even though outer atoll population had dropped to 8,000 by 1975.

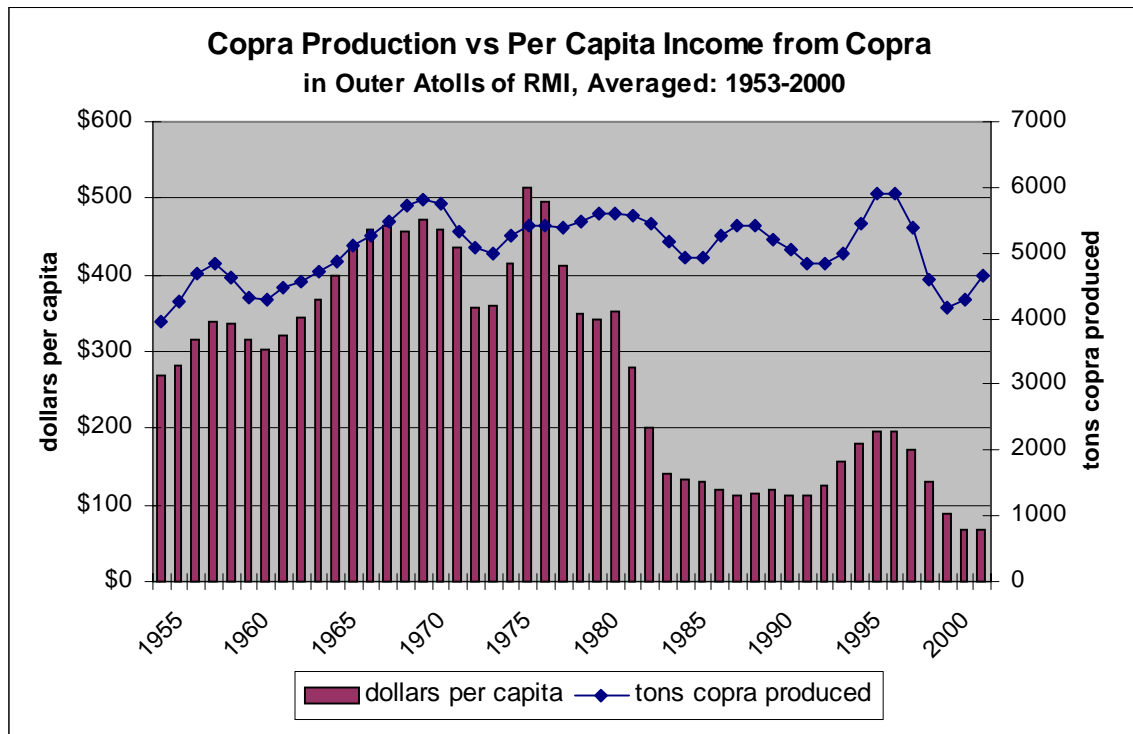
Figure 6 shows the relationship between averaged per capita income from copra for the entire outer atoll population and averaged tonnage production since 1953.

World copra production in any given year is closely tied to weather conditions in the tropical and subtropical western Pacific. Typhoons and droughts in this area are largely unpredictable and can have devastating consequences for productive capacity. In 1979, the price spiked up to \$940/ton after a series of typhoons debilitated plantations in the Philippines and Indonesia, which together account for 60% of world production. The severe droughts associated with El Ninos have consistently affected productivity in the Marshalls more than any other single factor (see Figure 11). Because yields from coconut palms diminish following drought, the price inevitably rises shortly thereafter since demand increases as production levels drop.

As price declined and population increased, per capita income from copra² fell from an average of \$375 in 1946-1980 to \$110 between 1981 and 1986 (see Figure 6). Gross atoll income from copra also suffered an absolute decline, despite the much greater number of people residing on the outer atolls (see Figure 7). The government of RMI had begun to subsidize copra price after the Compact went into effect in October 1986 to stabilize falling per capita income, but in 1991 per capita income from copra had dropped to a then-record low of \$73.

² Per capita income from copra is computed by dividing the total of gross revenues received from sale of copra (gross atoll income from copra) during a given period by the number of persons inhabiting the atoll(s) during that time interval.

Figure 6



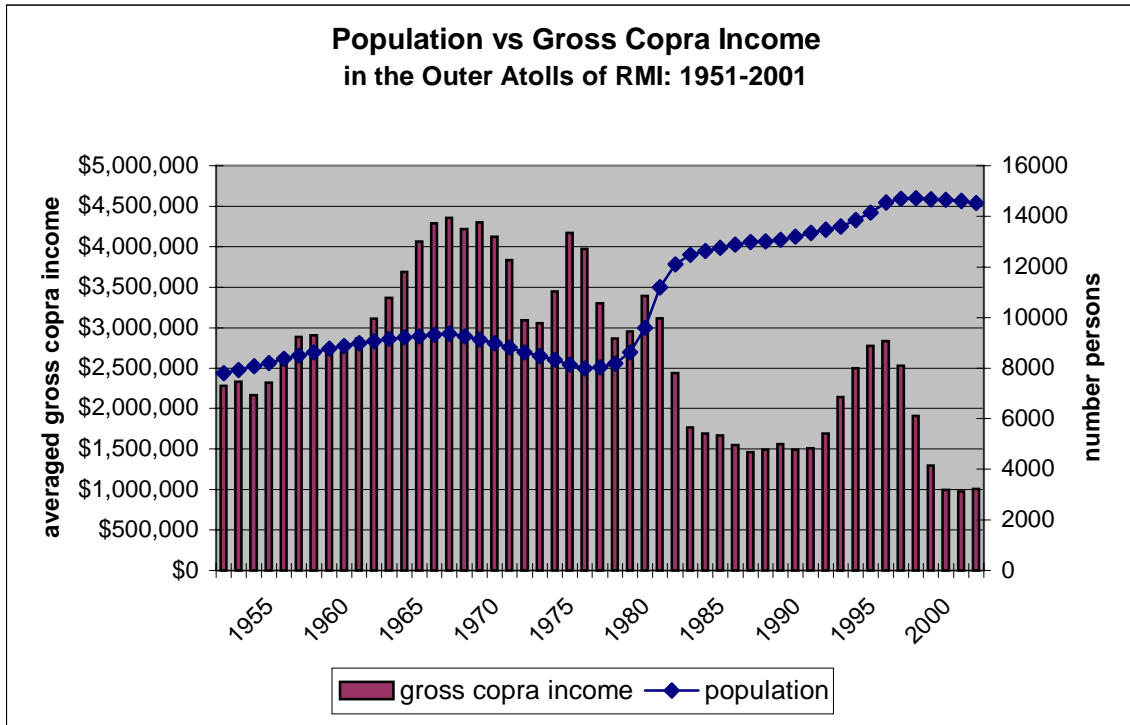
Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

In May of 1991, the first opposition political party in the Marshalls was formed to challenge the establishment government in the national elections to be held later that year. One of the opposition's campaign themes was greater assistance to the outer atolls. Immediately following its close reelection, the establishment party promised that outer atoll copra price thereafter would be maintained at \$560/ton.

To achieve this, the government provided subsidies averaging \$2.76 million annually over the next four years. Ensuing financial difficulties forced it to retract its commitment in 1996. From 1997 to 2001, reduced subsidies, falling market prices, the 1998 El Niño drought, and exceptionally infrequent shipping service during 1999 converged to depress average per capita income for the period to \$77 annually, bringing an era of hardship to the people of the outer atolls surpassed only by World War II. In 1999, per capita income from copra was only \$47.

Per capita income from copra as a percentage of gross income from copra has fallen 42% over the fifty years from 1952 through 2001, from 1.28% of gross income to 0.74%.

Figure 7



Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

D. Ailinlaplap Atoll: A Case Study

It is well beyond the scope of this report to provide a comprehensive description of the economies of all the outer atolls of the Marshall Islands. Each atoll has distinctive physical features which influence choice of the various forms of economic activity best suited to it. Each engages in the unique combination of income generating and subsistence activities regarded by inhabitants as the most productive, given conditions there.

Ailinlaplap Atoll was chosen for a case study of an outer atoll economy because data considered reliable was available for it and because nearly every category of economic endeavor characteristic of the outer atolls is conducted there. The latter is partially a function of its size, since physical conditions vary fairly widely throughout a large atoll.

Because of its size and strategic location in the central part of the archipelago, in the pre-contact era Ailinlaplap was the principal place of residence of the Marshall's most powerful chiefs and was regarded as the political and cultural capital of the atolls. In the language of the Marshalls, the word '*Ailin(atoll)laplap*[superlative suffix]' means "greatest" or "paramount atoll."

Some of the representative characteristics of Ailinlaplap are compared to those of the other 18 outer atolls in Tables 4, 5, and 6.

Table 4: Ailinlaplap Compared to the 18 Other Outer Atolls

category	Ailinlaplap	mean of 18 others	% change from Ailinlaplap
population	1959	702	-64%
lagoon area (sq miles)	290	109	-62%
land area (sq miles)	5.67	2.3	-59%
ave household size	8.3	7.3	-12%
density/square mile	346	375	8%
miles from Majuro	150	194	29%
miles from Kwajalein	110	161	46%
median household income	\$838	\$1,770	111%

Source: 1999 RMI Census

Table 5: Tons Copra per Person Ailinlaplap vs 18 Atolls

period	tons per person		percent difference
	Ailinlaplap	18 others	
1951-60	0.47	0.52	10.6%
1961-70	0.58	0.58	0.0%
1971-80	0.59	0.61	3.4%
1981-90	0.42	0.41	-2.4%
1991-00	0.35	0.36	2.9%

Sources: Statistical Abstracts 1985,1993/94, 2000.

Table 6: Per Capita Income from Copra Ailinlaplap vs. 18 Atolls

period	average per capita		percent difference
	Ailinlaplap	18 others	
1951-60	\$278	\$306	10.07%
1961-70	\$446	\$440	-1.35%
1971-80	\$375	\$385	2.67%
1981-90	\$124	\$122	-1.61%
1991-00	\$148	\$136	-8.11%

Sources: Statistical Abstracts 1985,1993/94, 2000.

1. The Pattern of Population Growth and Migration at Ailinlaplap

Ailinlaplap's population is the second largest of the outer atolls after Arno. It is estimated to have declined by 1% annually since the 1999 census tally of 1,959 persons to about 1,915 in 2001. Ailinlaplap's population increased more rapidly than most outer atolls following World War II since a high proportion of its natives had been employed by the Japanese at Jaluit and Kwajalein and had gravitated back home after the war. It decreased more rapidly than most, along with Jaluit's, when economic opportunities began to open up at Majuro and re-open at Kwajalein, since many of those who returned to their home atolls after the War had worked at Jaluit, the Japanese capital, and had developed skills in demand at the new urban locations.

Per capita income from copra at Ailinlaplap reached its highest sustained average from 1960 through 1975 (\$436 annually), the most prosperous period on the outer atolls since World War II. This phenomenon coincided, interestingly, with the interval when out-migration was most intense. Even though the money to be made from copra was at its highest during this period, getting a wage-earning job in the urban centers appears to have been more attractive.

In the mid-1970s, the migration pattern began to reverse due to factors already described. The rate of migration back to the Atoll was peaking from the late 1970s to the early 1980s, but as copra price began falling and the availability of Compact funding revitalized expansion of the urban economies, migration home declined. The strong copra subsidies of 1992-96 more than doubled depressed prices of the previous two years, motivating some families to move back during that interval.

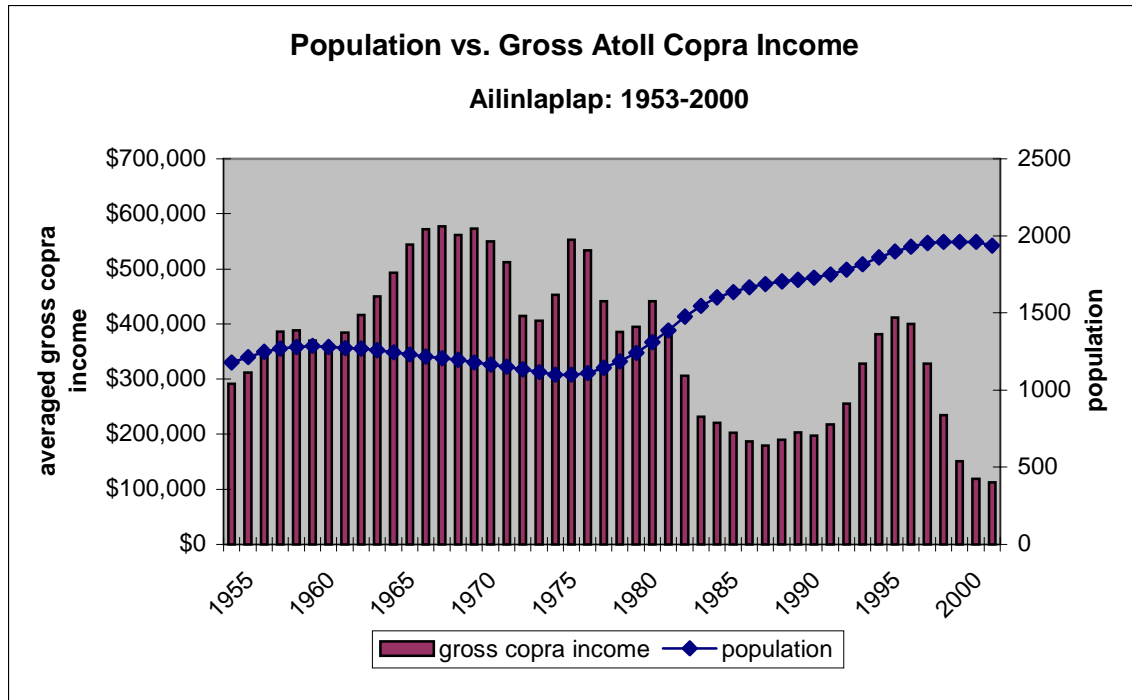
The decision for a family to migrate in either direction is not usually an impulsive one. In years past, whole families tended to move together. In the process of making the decision to migrate, they must carefully take into account the probability of enduring economic advantage from the move as well as the availability of housing, schools, and access to medical care. In recent years, however, young men, and some young women, less encumbered by family obligations, have begun to migrate more frequently on their own, in search of economic gain and the social excitement offered by the "bright lights" of the urban centers.

According to the 1999 RMI Census, only 44.7% of Ailinlaplap's population is between the ages of 15 and 59, the years of highest economic productivity, compared to 56.2% of the population in the urban atolls. The proportion of population at the urban atolls who are in the productive age range is 26.2% greater than Ailinlaplap's. On Ailinlaplap, proportionately fewer adults must provide support for a greater number of very young and very old people than in the urban areas. In times of economic hardship on the outer atolls, this disparity places a heavy burden on the relatively small adult population to care for their dependents.

When destabilizing events converge in the absence of sufficient remedial measures, motivation to migrate becomes stronger. A devastating typhoon struck Ailinlaplap in December 1997, followed by an extremely severe El Nino drought lasting until mid-May of 1998. Although the US Federal Emergency Management Agency provided food for nine months, poor coconut yields and very low prices reduced gross atoll income from copra during 1998-1999 to 25% of the average for the previous five years. The closing of a dispensary on one of the smaller islands of the atoll had contributed to loss of population there as residents became uneasy about remaining without access to medicine and a minimal level of health care.

The economies of the urban areas are very stable compared to the outer atoll copra economy. Given the volatility of world market copra prices and the apparent inability of the RMI government to establish a stable, equitable price structure for copra, confidence is generally low that moving back to the outer atolls will bring economic advantage. When copra price has been consistently high or low for several years and people believe it will continue thusly, noteworthy migration may occur. Very low copra prices since 1998, coupled with the boom in construction work in Majuro from Taiwan-funded projects that began in 2000, have induced a new wave of migratory drift from Ailinlaplap. Figure 8 shows how population has varied with gross atoll copra income.

Figure 8



Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

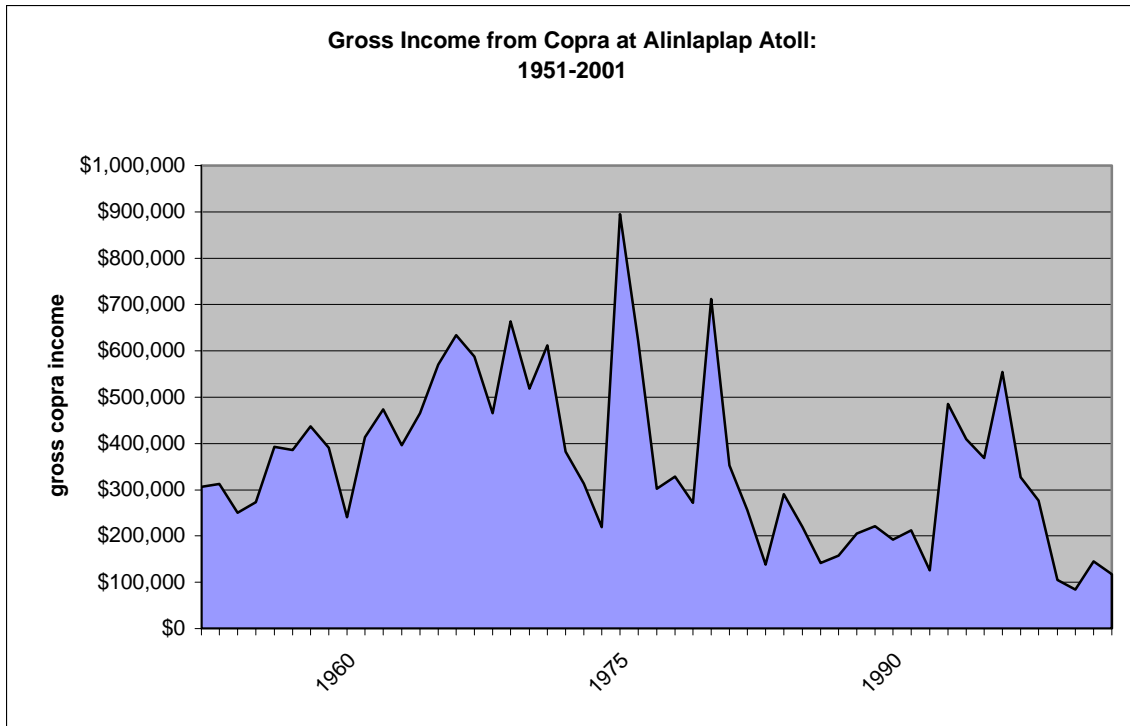
E. The Copra Industry at Ailinlaplap Atoll

On average, Ailinlaplap has produced 13.5% of outer atoll copra. Gross atoll copra income in most years is a function of three independent variables: price, frequency of shipping, and yields.

1. Price

Since 1951, copra price has ranged from 59 cents per pound during 1974 to 9 cents per pound in 2001/02. During this period at Ailinlaplap, annual per capita income from copra has varied 1760%, from \$829 in 1974 to \$47 in 1999. Gross atoll copra income ranged from \$6.73 million to \$0.67 million for those same years (see Figure 9). Because of wide fluctuations in copra price, outer atoll economies have been highly unstable and full of year-to-year uncertainties, an unsettling condition for families trying to plan for their futures, as well as for entrepreneurs.

The extraordinary range of these values has had a significant influence on attempts to establish continuity in alternative income generating activities. When copra price is very low, outer islanders seek alternate sources of income. When it is exceptionally high, engagement in alternative economic activities established when price was low diminishes or is abandoned entirely because highly enhanced income from copra is sufficient to provide for everyone's needs.

Figure 9

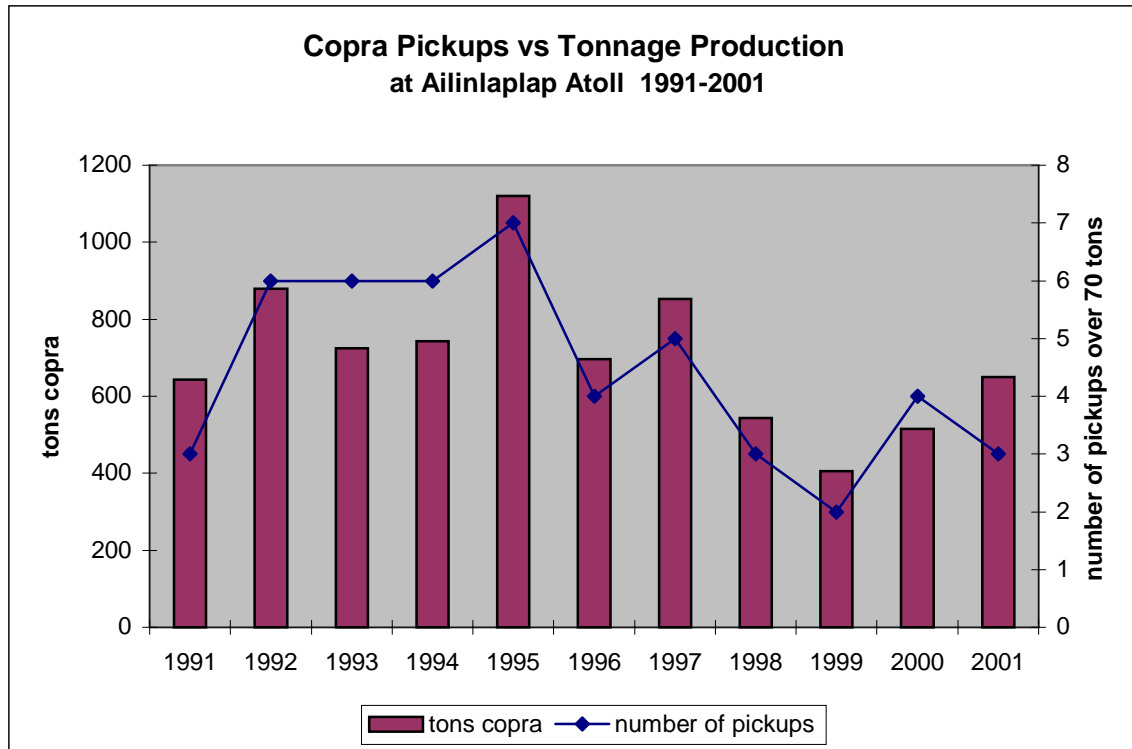
Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

Producers are very sensitive to the relationship of effort per dollar earned. According to the RMI Coconut Development Study (1998), it takes a total of 18 hours, from clearing brush, to planting new trees, to gathering, husking, opening, drying, removing the meat, re-drying, bagging, storing and later delivering them to the ship, to make 100 pounds of copra in a year of normal yield. This translates to an hourly wage of \$.50 when price is 9 cents per pound (2001), \$1.83 per hour when copra averaged 33 cents per pound (1951-1979), and \$3.67 per hour at the peak price of 66 cents (late 1974). There have never been enough ripe coconuts on Ailinlaplap for copra-making to be a full time occupation, however. The 350 or so men on Ailinlaplap who are physically qualified for such work can produce 700 tons annually, the 40-year average for the Atoll, when each of them works fewer than 14 hours per week.

2. Frequency of Shipping

Many persons familiar with the copra industry argue that frequency of shipping is the principal factor affecting copra production. Copra dries out and otherwise deteriorates when it is stored for long periods, reducing its sale value. Producers realize this and prefer to make it when they know a ship visit is imminent. Figure 10 strongly suggests that there is a direct relationship between production levels and frequency of shipping, although important contributing factors such as price and drought should not be ignored. It may also be argued from the graphed relationships that frequency of shipping varies as a function of the rate of copra production.

Figure 10



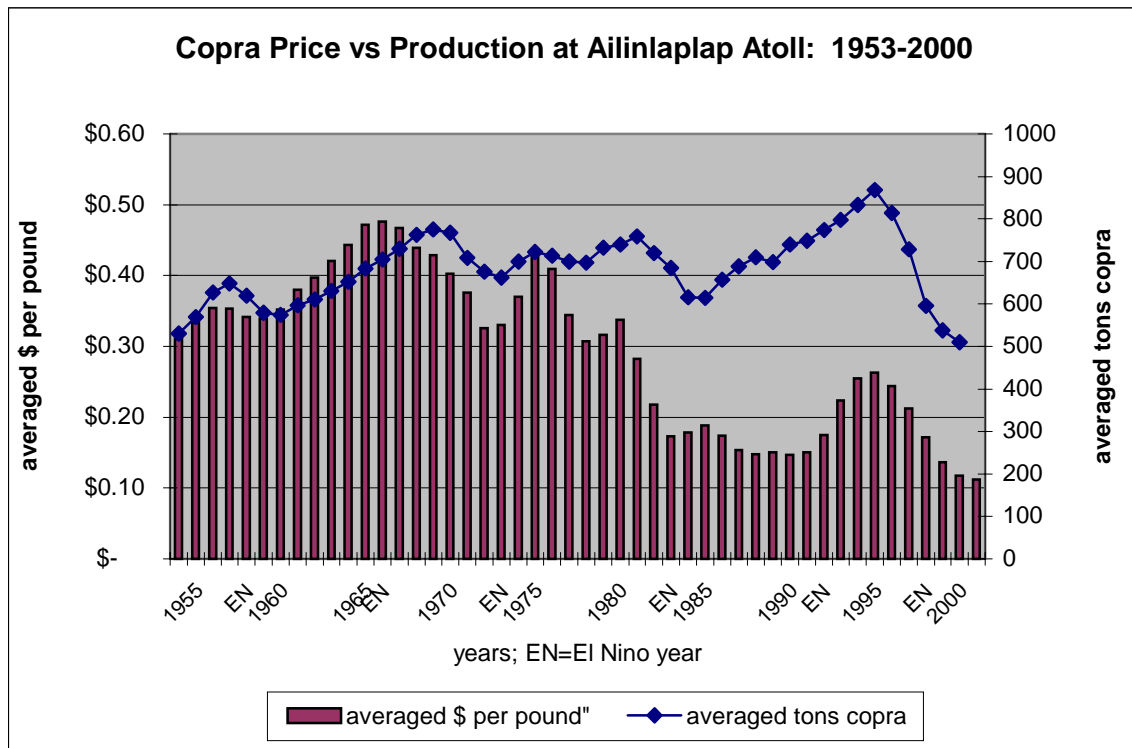
Source: Tobolar Processing Plant

Under both the Trust Territory and RMI Governments, ships have usually serviced most outer atolls four or five times a year. Occasionally, however, this general pattern is disrupted. From May 1998 through February 1999, the U. S. Federal Emergency Management Service (FEMA) shipped relief food to the outer atolls to mitigate losses to subsistence agriculture from the typhoon and severe El Nino drought of 1997/98. Few ships are available for this purpose in RMI and FEMA had priority use of them for the interval. There were only three copra pickups of over 70 tons at Ailinlaplap in 1998 and only two the following year. Of the two government field trip ships in service early in 1999, one was decommissioned in February and the other became inoperable shortly thereafter until 2001. A privately contracted ship made two pickups early in 2000 and a government-owned LCU (Landing Craft Utility), though not designed for that purpose, was pressed into service late in the year for two limited pickups. Copra production was deeply depressed over this period from the climactic chaos of 1997/98, but lack of reliable ship service may have contributed to low production figures. Two used ships purchased with Taiwan aid began service in the spring of 2001 but failed to pick up all the copra at Ailinlaplap in three visits that year.

3. Yields

Observers of the copra industry occasionally argue over the relationship of price and production levels, debating whether production increases as price declines or vice-versa. Data depicted in Figure 11, where prices paid and production recorded have been averaged over several years time to render a clearer pattern of relationship, shows that generally, price and productivity are directly proportional. In the chart, changes in production appear to lag behind changes in price by several months or more. This is because tonnage production is recorded only after copra has been transported to Majuro.

Figure 11



Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

Yields are dramatically lowered in the wake of typhoons or droughts. Trees produce fewer nuts. Those that ripen are typically quite small with little useable meat. Utilizing these reduced yields requires a great deal more effort since three to four times as many nuts are needed to produce a bag of copra. This necessity multiplies the number of hours required to gather and husk enough nuts to make a bag.

At Ailinelaplap, production dropped 40% over the three years following the 1997 typhoon and 1997-1998 El Niño drought, and by 45% for two years after the 1982-1983 El Niño event. When these five years of lowered production are excluded, the Atoll's average production from 1980 to 2001 would have been 774 tons instead of 703, or an average of 10% more for each of the years in the period.

The effect of El Niño droughts on production is evident even in the averaged figures used in the chart above. World market price usually increases for a year or two following a general drought since supplies are reduced. Producers respond to the price

rise by trying to make more copra, but usually do not succeed since yields are insufficient. Somewhat localized droughts can occur in non-El Nino years as well. During July-Sept 2001, rainfall at Majuro was 115% of normal, but at Ailinlaplap, 150 miles west but at the same latitude, rainfall was 43% of normal.

Coconut palms also appear to entertain random 'sleep cycles' for unknown climatological reasons, producing fewer nuts and reducing yields.

4. Other Factors

Timely payment for copra at the outer atolls has occasionally stressed the industry. Since it is government policy that subsidies are to be used only for actual purchases of copra, and Tobolar must wait to be paid for its infrequent coconut oil export shipments, too often there has been insufficient cash to pay businessmen the full amount owed for their copra.

At Ailinlaplap, locally owned trading companies buy most of the copra between ship pickups, usually by extending credit for purchases from their stores to producers for copra made. Formerly, these companies were paid in cash for this copra immediately after the pickup ship had weighed and graded it. In recent years, insufficient cash has been available for on-the-spot payment. Businesses were forced to wait for several months or more before getting paid, in effect extending credit to the government/Tobolar by tapping into their own capital or seeking private loans to purchase goods for resale until they received payment for the copra they had held. The smaller trading companies lacked the capital and/or access to credit to remain competitive and consequently had difficulty staying in business. This problem was remedied when the government began to secure loans for purchasing copra from the Bank of the Marshall Islands, which replaced Tobolar as purchasing agent for copra aboard the ships with its own personnel. In the Box below, some of the consequences of a short period of very high copra price at Ailinlaplap are described.

Historical anecdote: For possibly the only time in the history of the Marshalls, three of the four copra ships then operating converged at the village of Airok in Ailinlaplap on the same day in August of 1974, competing to buy copra. Two of the ships were privately owned; the third was a government ship with a private business handling the ship's store and copra purchasing. Price per pound had rapidly been increasing that year due to the Arab oil embargo, standing at 53 cents per pound in August before it finally peaked at 66 cents in October, a record high. Ship operators were making exceptional profits, the government freight rate for copra having just been increased by ½ cent to 1½ cents per pound. Sales revenues from the ships' stores (and at local trading companies) were running high since copra makers suddenly had much more disposable cash than ever before.

Motivated by record-setting prices, people had been scouring the atoll for copra. They were making enough money now to charter boats to take them to uninhabited islets so they could make copra where they had land rights. Though overall yield was down in 1974 due to a moderate El Nino drought the previous year, production was high because increased earnings gave them access to areas where it had not been cost-effective to make copra because travel expenses had outweighed copra profits. Arguments were erupting over boundary lines between strips of land as producers competed for individual nuts. The extra cash made available from copra prompted some men to concentrate on fishing and some women on making thatch when it became apparent that there was a cash market for them within the villages. Such specialization

was regarded by some as threatening the mandates of custom, where opportunities for personal gain were perceived as undermining traditional values coveting communal harmony grounded in personal and collective consideration and reciprocity. But the emergent differentiation of labor at the Atoll resulting from availability of disposable cash income was welcomed by most because it freed them to specialize in activities at which they excelled.

With their new-found wealth, some producers made purchases for their families, then rode a ship to Ebeye at Kwajalein, arriving with hundreds of dollars of cash in their pockets to amaze relatives who were accustomed to their poor outer atoll cousins coming to visit perhaps with a box of dried fish but otherwise penniless. Majuro ran out of building materials as outer islanders bought up the lumber stock to make improvements to their houses or build new ones.

The Trust Territory Copra Stabilization Board in Saipan had been unable to resist enormous political pressure to raise copra price to unprecedented heights during this interval. The euphoria in the outer atolls from the unexpected windfall due to a distant war was short-lived, however, as prices began to recede the following year. In 1976, with the market still falling, the Stabilization Board dropped the price back to the pre-1974 level of 22 cents per pound.

6. The Subsistence Economy at Ailinlaplap

The principal enduring asset of the outer atolls are the foods that grow on their islands and the marine life in their lagoons and surrounding ocean. Long before cash value was attached to copra, the atoll people had managed to subsist on the food they could gather. This consisted mainly of breadfruit, coconuts, pandanus, bananas, taro, arrowroot, birds, and fish, turtles, porpoise, mollusks, crabs and other crustaceans from the sea. Pigs, chickens, papaya and lime were brought in well over a century ago; pumpkin was recently introduced by agriculturists. All these varieties of foods are still present, albeit in limited quantities, because of the finiteness of land and lagoon areas, poor soil, droughts and typhoons.

In the pre-contact era, the resources of all the atolls were able to sustain no more than the 11,000 to 14,000 persons reported by early explorers. Even though the introduction of outside technological innovations such as machetes, fishing nets, lines and hooks, and improved food preservation techniques enhanced capacity to exploit subsistence resources, and even though per capita income from copra augmented subsistence resources by \$350 annually through this period, censuses through 1945 indicate that population of the entire archipelago seems to have hovered around 10,000. The population of the 19 atolls in the German census of 1880 was 8,456, in the Japanese one in 1935 was 8,490, and in the Navy's in 1945 was 7,510. Today's estimated population for the same 19 atolls is 14,500, an increase of more than 75% over the average of these three censuses. At these atolls, however, population has not increased at a uniform rate since the War. Likiep Atoll's increased only 5% and Ebon's by 25%, while Lae's and Wotho's increased by 240%, Namu's by 220%, and Arno's and Ailinlaplap's by 110%.

Contact with outsiders has brought certain important innovations, such as matches, water storage tanks, kerosene lanterns, better fishing gear, steel tools, availability of salt for preservation, and innumerable others that have helped augment subsistence capacity. Intrusion of alien insects and plants from increased contact with the outside world in recent years, on the other hand, has diminished it. The long-legged

ant (*Anoplolepis gracilipes*), a destructive native of Africa, entered the Marshalls some 25 years ago, probably through Majuro or Kwajalein. It now infests most atolls and 80% of Ailinlaplap. Long-legged ants can totally annihilate land crab populations within a few years on islands they have invaded. The mealybug (Family Pseudococcidae) and spiraling whitefly (*Aleurodicus disperses*), other invasive species now common throughout the atolls, can severely retard breadfruit and banana productivity. Attempting to attach a dollar value to these trade-offs is not within the scope of this study.

When copra price declines, producers tap more heavily into local resources to compensate for having less money to purchase supplemental imported food, kerosene and other necessities. When price is high, there is less reliance on subsistence sources. It is clear, however, that a 75% increase in population coupled with the 80% decrease in per capita income from copra over the past 20 years suggests that subsistence resources are now under uncommonly strong pressure to compensate for lost copra income.

Population has increased well beyond the historical levels subsistence capacity could support, while availability of cash income to mediate the needs of the growing number of people dependent on copra has appreciably diminished. The net effect of these conditions on most outer islanders has been a deepening erosion in their standard of living. As we shall see later in this report, however, the numbers and wealth of families of government employees on the outer atolls has grown even as the standard of living of copra-making families has plunged.

Table 7 shows the approximate value of various subsistence foods consumed by households at Ailinlaplap in 2001 as derived from interviews and observations. In the Table, the Ailinlaplap profile is compared to the rural household consumption pattern developed by R. Shaw for the outer atolls in general in his economic report of 1994, "Strengthening of Agricultural Support Services." Valuations of particular products in Table 7 are based on their cash value at Ailinlaplap during 2001. These values are somewhat less than ones given in Shaw's report, which was compiled when copra was more than double the 2001 price, because when the cash economy of the outer atolls is depressed, local cash valuation of subsistence products drops.

Table 7: ESTIMATED VALUE OF HOUSEHOLD CONSUMPTION OF LOCAL FOODS
at Ailinelaplap in 2001, copra price of \$.09 per pound, population of 1915 persons

LOCAL PRODUCE	/person unit	\$ value /week per unit	\$/person /week	\$/person /year	total \$ value	Compared to Shaw's			
						total \$	difference	% differ	
breadfruit	no.	2 \$0.50	\$1.00	\$52.00	\$99,580	\$67,251	-\$32,329	32%	
bananas	lb.	0.3 \$0.30	\$0.09	\$4.68	\$8,962	\$5,221	-\$3,741	42%	
pandanus	lb.	1 \$0.20	\$0.20	\$10.40	\$19,916	\$25,720	-\$5,804	-29%	
pumpkin	lb.	0.25 \$0.25	\$0.06	\$3.25	\$6,224	\$0	\$6,224	100%	
papaya	no.	0.25 \$0.30	\$0.08	\$3.90	\$7,469	\$4,313	-\$3,155	42%	
lime	no.	0.25 \$0.10	\$0.03	\$1.30	\$2,490	\$0	\$2,490	100%	
coconuts	no.	25 \$0.03	\$0.63	\$32.50	\$62,238	\$79,862	-\$17,624	-28%	
Produce Subtotal			\$2.08	\$108.03	\$206,877	\$182,367	-\$24,510	12%	
LOCAL ANIMAL									
marine	lb.	1.75 \$0.65	\$1.14	\$59.15	\$113,272	\$202,874	-\$89,602	-79%	
chicken	lb.	0.15 \$3.00	\$0.45	\$23.40	\$44,811	\$13,647	-\$31,164	70%	
pork	lb.	0.1 \$1.00	\$0.10	\$5.20	\$9,958	\$4,932	-\$5,026	50%	
other	lb.	0.05 \$1.50	\$0.08	\$3.90	\$7,469	\$868	-\$6,600	88%	
Animal Subtotal			\$1.76	\$91.65	\$175,510	\$222,322	-\$46,812	-27%	
Total Value Local Food			\$3.84	\$199.68	\$382,387	\$404,689	-\$22,301	-6%	
Per Household Value Local Food					\$1,657	\$1,754	-\$97	-6%	
Per Capita Value Local Food					\$200	\$211	-\$11	-6%	

Sources: Kevin Hart; Ray Shaw

7. Barter and Remittances

Utilization of the atoll's subsistence resources increases when copra price declines as people try to maintain equilibrium within the household economy by consuming and exporting more local products. Exports for barter or cash include salted/dried fish and mollusk meat, coconut syrup (*jakamai*) and oil (*binep*), and, if a family member is traveling to Majuro or Kwajalein by ship and can accompany them, bananas, pandanus, coconut apple, pigs and chickens. These are commonly sent to relatives in the urban centers who welcome them as gifts of a sort and are prosperous enough to reciprocate in kind with rice, flour, sugar, canned foods, or other imports for which the recipient may not have adequate cash. Occasionally, urban relatives will sell these products to businesses and purchase goods with the proceeds to send to their outer atoll cousins.

'Remittances' to the outer atolls from urban relatives shade into this system of reciprocity and are rarely transferred as cash, more typically consisting of food, articles of clothing, an airplane ticket, or other items not readily available at the atoll. The principal export products having cash value from Ailinelaplap in recent years, besides copra, have been handicrafts, fresh fish, trochus shell and shark fin.

8. Patterns of Production, Consumption, Exchange and Remittance

Copra income, because of its long-standing acceptance as the fundamental measuring stick for standard of living, continues to be regarded by most outer islanders as the primary variable determining the quality of their economic lives. Consumption of subsistence resources, export of local products for either exchange or cash sale, and the quantity of remittances received are largely a function of how much income is generated

from copra in any given year. The approximate cash values or their equivalents of these four categories of economic inputs are given in Table 8 below.

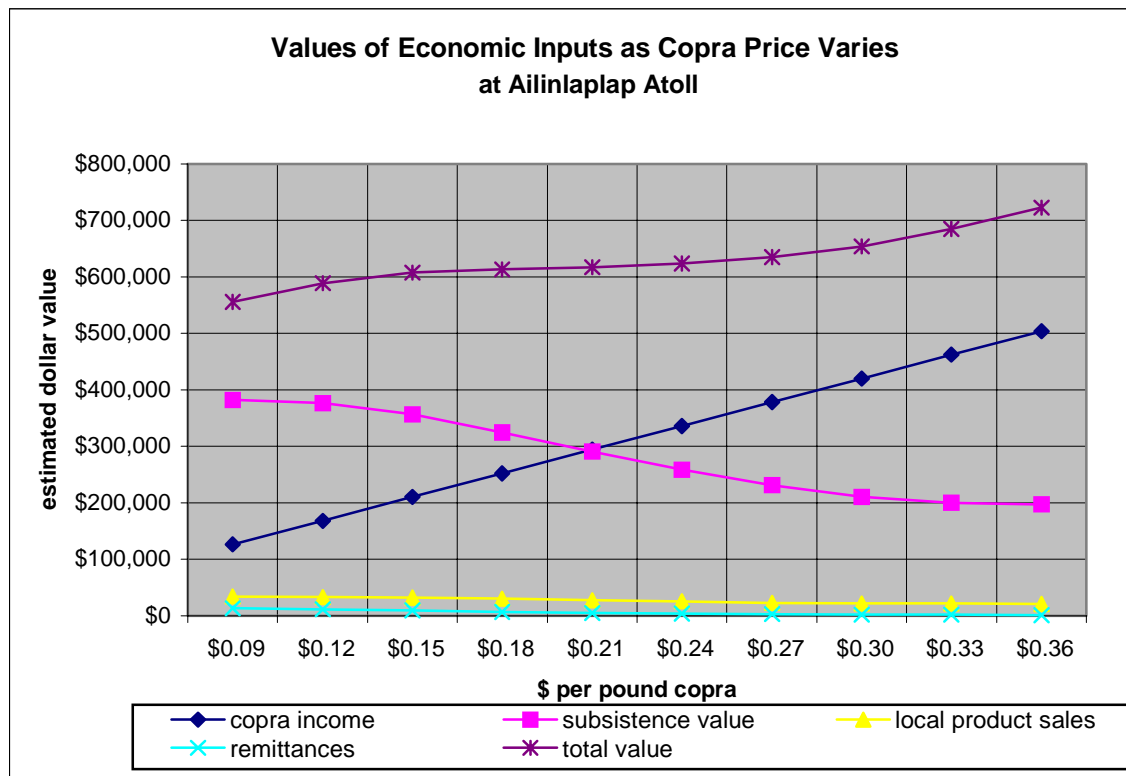
Table 8: Approximate Cash Values of Economic Inputs at Ailinalaplap Atoll as Copra Price Varies

\$/lb. copra	ave copra production @ 700 tons	% total	value household subsistence	% total	exports of local products	% total	value of remittances	% total	Grand Total	per capita
\$0.09	\$126,000	23%	\$382,400	69%	\$34,000	6%	\$13,000	2.3%	\$555,400	\$290
\$0.12	\$168,000	29%	\$376,000	64%	\$33,125	6%	\$11,200	1.9%	\$588,325	\$307
\$0.15	\$210,000	35%	\$356,250	59%	\$32,000	5%	\$9,250	1.5%	\$607,500	\$317
\$0.18	\$252,000	41%	\$325,000	53%	\$30,000	5%	\$6,650	1.1%	\$613,650	\$320
\$0.21	\$294,000	48%	\$290,700	47%	\$27,550	4%	\$5,000	0.8%	\$617,250	\$322
\$0.24	\$336,000	54%	\$258,500	41%	\$25,080	4%	\$3,700	0.6%	\$623,280	\$325
\$0.27	\$378,000	60%	\$231,200	36%	\$23,000	4%	\$2,800	0.4%	\$635,000	\$332
\$0.30	\$420,000	64%	\$210,000	32%	\$21,900	3%	\$2,100	0.3%	\$654,000	\$342
\$0.33	\$462,000	67%	\$200,300	29%	\$21,250	3%	\$1,600	0.2%	\$685,150	\$358
\$0.36	\$504,000	70%	\$197,000	27%	\$20,800	3%	\$1,100	0.2%	\$722,900	\$377

Sources: RMI Statistical Abstracts; interviews and observations at Ailinalaplap by Kevin Hart

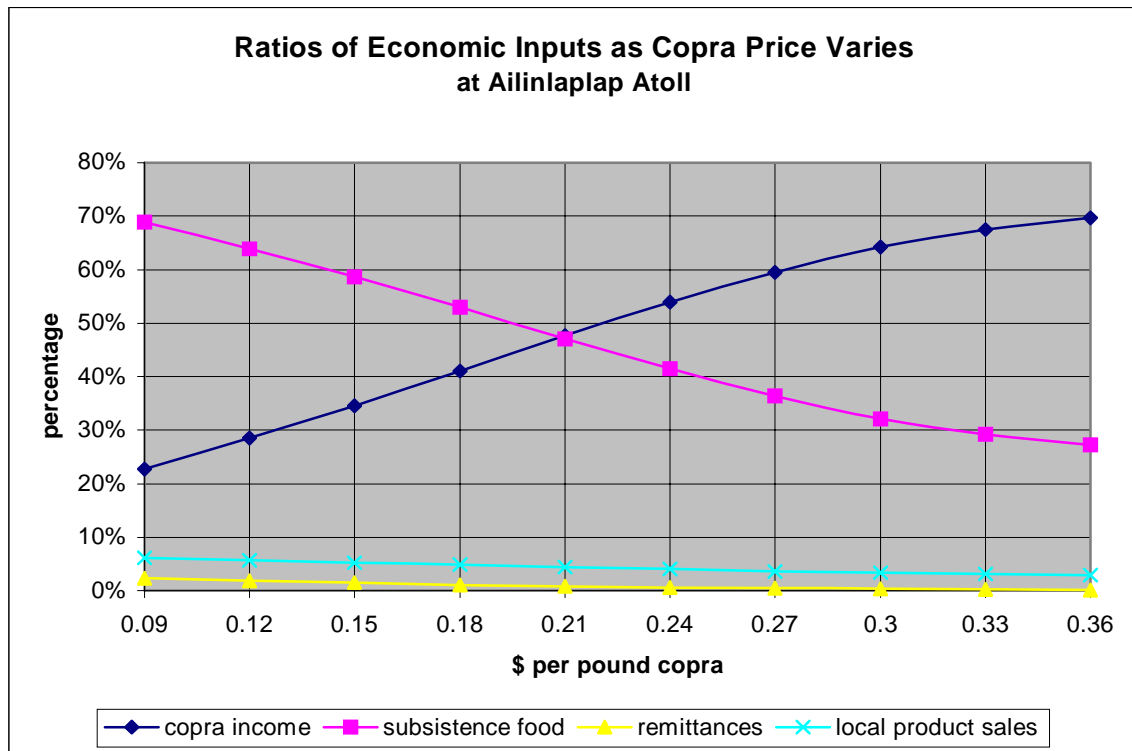
The patterns by which the relative values of these inputs and their ratios vary as a function of copra price are depicted in Figures 12 and 13 below.

Figure 12



Source: Kevin Hart

Figure 13



Source: Kevin Hart

F. Gross Atoll Product at Ailinlaplap

Gross Atoll Product (GAP) is the estimated total value of all economic activity within an atoll. In Table 9, estimated GAP for Ailinlaplap for the years 1970-1980 is compared to GAP during the 1999 Census Period, July 1998 to June 1999.

1. Government Salaries

The most important category of income that is invariant with respect to copra price is salaries and wages paid by the national government to teachers and health aides (see Table 10). Total payroll from governments at Ailinlaplap in 2001 was \$404,000, although only about 20% of this amount, or approximately \$80,000, is actually spent on the atoll, the balance going to urban businesses.

In 2001, the 49 national government employees (2.6% of population) were paid \$384,000 (62%) of all earned income. The number of persons living in households where someone is employed by the national government numbers approximately 400, comprising about 20% of population. Average per capita for members of these households from government salaries was approximately \$945.

The Local Atoll Council also pays salaries to its 48 policemen, council officials, midwives and local-hire teachers. The total of their salaries is only 5% of those paid by the national government. Per capita income for these households' members from local government salaries was \$50.

**Table 9: Comparison of Gross Atoll Product at Ailinlaplap Atoll:
1970-80; 1999**

time period population	1970-1980, averaged 1180 persons			1999 Census Data Period 1959 persons			percent change in per capita
	dollar value	% of GAP	per cap of GAP	dollar value	% of GAP	per cap of GAP	
Earned Income							
government salaries	\$178,000	20%	\$151	\$387,000	38%	\$198	31%
copra production	\$455,350	51%	\$386	\$84,600	8%	\$43	-89%
business profits	\$55,000	6%	\$47	\$65,000	6%	\$33	-29%
handicraft sales	\$400	0%	\$0	\$8,500	1%	\$4	1180%
marine products sales	\$0	0%	\$0	\$11,700	1%	\$6	---
Subtotal	\$688,750	77%	\$584	\$556,800	54%	\$284	-51%
Unearned Income							
nuclear tribunal	\$0	0%	\$0	\$45,000	4%	\$23	----
social security	\$3,000	0%	\$3	\$25,000	2%	\$13	402%
remittances & barter	\$1,500	0%	\$1	\$6,500	1%	\$3	161%
Subtotal	\$4,500	1%	\$4	\$76,500	7%	\$39	924%
Cash Equivalent of Local Subsistence Food							
food consumed	\$200,000	22%	\$169	\$388,000	38%	\$198	17%
food exported	\$500	0%	\$0	\$2,000	0%	\$1	141%
Subtotal	\$200,500	22%	\$170	\$390,000	38%	\$199	17%
Gross Atoll Product	\$893,750	100%	\$757	\$1,023,300	100%	\$522	-31%

Sources: RMI 1999 Census; RMI Statistical Abstracts 1989/90, 1993/94; Ministry of Education; Tobolar; Kevin Hart

Table 10: Government Payroll by Job Category: Ailinlaplap 2001

job category	average salary	number personnel	persons per hshld	household population	gross income	per capita
elementary teachers	\$ 8,378	37	8.3	307	\$ 310,000	\$ 1,009
Head Start teachers	\$ 8,540	4	8.3	33	\$ 34,000	\$ 1,030
Head Start aides	\$ 2,500	4	8.3	33	\$ 10,000	\$ 301
health aides	\$ 7,500	4	8.3	33	\$ 30,000	\$ 904
Council employees	\$ 409	48	8.3	398	\$ 20,000	\$ 50
Total		97		805	\$ 404,000	\$502

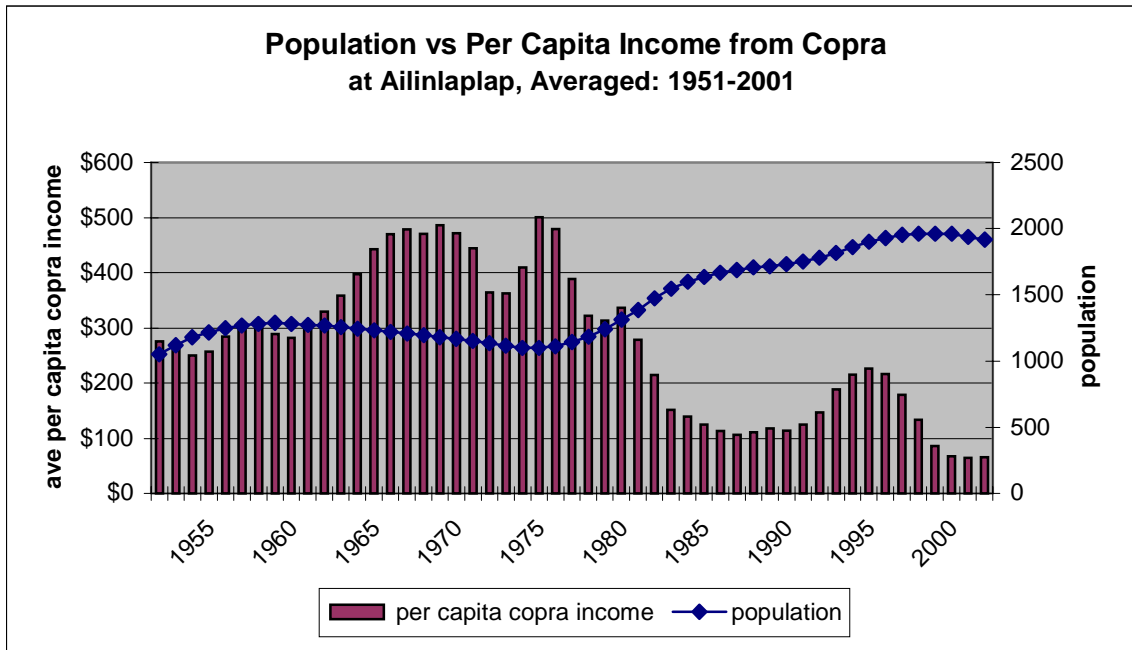
Sources: RMI Ministries of Health and Education; Head Start; Ailinlaplap Local Government

2. Income from Copra

During 1998-2001, average annual per capita income from copra was only \$58, 15% of its average for the 20-year period 1961-1980, down from an average of \$180 over the prior 20 years (1978-1997) and from \$404 over the 30 years prior to that. Decreasing price coincided with rising population. The relatively fixed yield of copra nuts available were diminishing in absolute value while being divided among an ever-increasing number of people. Proposals to increase production through government-funded coconut palm replanting projects do not appear to be cost effective.

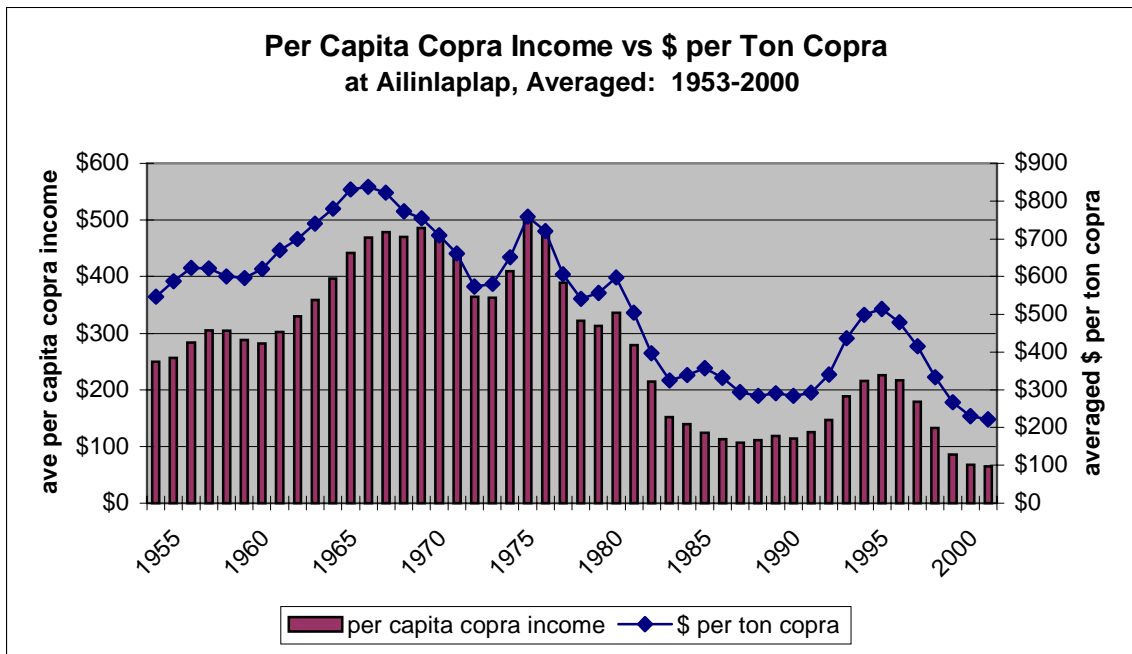
Figures 14 and 15 below show how per capita copra income has declined as population grew and copra price dropped.

Figure 14



Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

Figure 15



Sources: RMI Office of Planning and Statistics, 1985; RMI Statistical Abstracts 1989/90, 1993/94, 2000; Tobolar.

3. Business Profits

More than 20 business licenses for retail sales were issued in 2001 by the Local Atoll Government. Five of these businesses handle more than 80% of retail sales on the atoll, however. They are typically run directly out of the owner's house, -small, informal operations with variable inventories comprising a limited number of staple items. Average gross annual sales of local businesses is estimated to be \$260,000.

4. Handicraft Sales

There has been a very substantial increase in export of handicrafts from Ailinlaplap over the past few years. This is largely a function of much improved marketing by Majuro and Kwajalein entrepreneurs and the need of copra makers for cash to shore up falling living standard. No hard data is available for the value of handicraft exports, but interviews with businessmen and producers suggest that in 2001, income from handicraft sales was about \$28,000. Many Marshallese handicrafts incorporate various types of decorative shells, which, because of intensified utilization, are becoming harder to find on the reef areas bordering villages at the atoll.

5. Marine Product Sales

There are three principal categories of marine products from Ailinlaplap over the past six years for which cash payments have been made: fresh fish, shark fin and trochus shell. Salted/dried fish from the atoll are generally produced for local consumption or exported for barter or as gifts rather than cash sale.

The Japanese-funded Fish Base at Buoj, Ailinlaplap, was opened in 1994 at a total cost of over \$2 million. The primary purpose of the facility is to supply fresh reef fish at low cost to residents of Ebeye Island at Kwajalein Atoll and secondarily, to provide a means of supplementing income for Ailinlaplap residents. Precise data on catch values is available only for 2000-2001. Values for other years are estimates derived from unofficial reports and interviews with the Base Manager (see Table 11). Benefits to Ailinlaplap as a whole seem small, averaging only \$1.57 per capita annually for 2000-2001, given the considerable infrastructure and operational costs of the Fish Base. A more detailed discussion of base operation is found in Section III of this report.

**Table 11: Earned Income from Marine Products
at Ailinlaplap: 1996-2001**

year	fish	shark fin	trochus	total
1996	\$1,840	\$833	\$19,585	\$22,258
1997	\$1,105	\$1,025	\$5,440	\$7,570
1998	\$2,423	\$1,384	\$3,413	\$7,220
1999	\$2,873	\$1,720	\$8,640	\$13,233
2000	\$4,049	\$1,409	\$0	\$5,458
2001	\$1,997	\$875	\$0	\$2,872
Total	\$14,287	\$7,246	\$37,078	\$58,611
Average	\$2,381	\$1,208	\$6,180	\$9,769
%	24%	12%	63%	100%

Sources: 2000-2001 fish data from Ailinlaplap Fish Base; 1996-1999 amounts from unofficial reports; trochus and shark fin data from Kevin Hart.

Purchases of shark fin and trochus shell began in 1996 as a consequence of a \$38,000 US Department of Commerce/National Marine Fisheries Service-funded marine resources development project at Ailinlaplap. A detailed description of this project is found in Section III.

6. Nuclear Claims Tribunal Compensation and Social Security Payments

Compensation by the RMI Nuclear Claims Tribunal for ailments resulting from the nuclear testing program are difficult to estimate since no records are kept of payments by place of residence, but comprise about \$45,000 annually. Social Security payments are likewise difficult to estimate since records of payments by place of residence are similarly not kept, but about \$25,000 on average in recent years is paid to recipients on Ailinlaplap. Approximately 25% or \$18,000 of the total of these payments is spent at the atoll.

7. Remittances and Barter

See discussion on page 20.

8. Subsistence Food

From May 1998 through February 1999, FEMA distributed imported food to the outer atolls to mitigate the effects of the 1998 El Nino drought. The value for subsistence food consumed given in Table 9 is an estimate of what *would have been* consumed during this period of exceptionally low income from copra. Coincidentally, this value was at parity in 1998/99 with the value of government salaries.

9. Distribution of Earned Income

Interpolating 1999 Census data by income group (Table 12) indicates that 60% of respondents to the household income survey (1,154 persons) had an average per capita income of \$64 during the 12 months preceding the census. This cohort, comprised principally of copra-producing families, is 50% larger than the estimated historical population of 765 persons; it utilizes about 75% of the Atoll's subsistence resources and produces 80% of its copra. Members of the other two cohorts, comprising 40% of population, utilize about 25% of subsistence resources and make the balance of copra. As per capita income rises, the pressure on subsistence resources decreases in intensity.

Table 12
DISTRIBUTION OF EARNED INCOME at AILINLAPLAP
during 1999 Census Data Base Period: 7/98-6/99

category	percentage of population			totals
	60%	20%	20%	
number persons	1154	387	393	1934
income of groups	\$74,020	\$99,260	\$355,500	\$528,780
per capita	\$64	\$257	\$904	\$273
% total income	14%	19%	65%	100%

Source: 1999 RMI Census

Data for Tables 9 and 12 were derived from independent sources, yet the difference between estimated per capita from earned income of \$289 and \$273, respectively, is less than 6%.

10. The Copra Subsidy

Copra price has fluctuated more than 300% over the past 15 years, from 9 to 28 cents per pound, due to changing market demand and variable subsidy amounts. Throughout these 'boom and bust' periods in copra price, producers have not known from one year to the next what the price will be and have been forced to shift their work priorities among the most productive cash and survival-oriented activities available at any moment. This instability has undermined the willingness of producers to invest in long-term exploitation of other resources. When price is very low, there is severe hardship and strong desire to exploit other sources of cash. When price is very high, the opposite prevails.

Copra subsidies have typically been a function of politics rather than economic development. Copra price should be stabilized at a level high enough to preclude abject poverty but not so high that income derived solely from copra is regarded as fully adequate for the needs of the household. Full stabilization at the appropriate price over a period of ten years or more will support a minimum level of economic security, yet offer motivation to utilize other available resources in the interest of enhancing standard of living.

Average annual government subsidy for outer atoll copra over the 15 years 1986-2000 has been approximately \$1.2 million, or an average subsidy of \$237 per ton (11.9 cents per pound). The unsubsidized price of copra averaged \$117 per ton (5.8 cents per pound) over this period. Had subsidies been used to fully stabilize price, it would have been constant at \$354 per ton (17.7 cents per pound), providing a stable per capita income from copra of \$135 annually for all the people of the outer atolls over the entire 15-year period. During 1998-2001, outer atoll per capita copra income averaged \$62.

G. Final Note

During negotiations for the first Compact of Free Association from 1969 through 1982, it was assumed that "the outer atolls can take care of themselves" because copra would continue to provide an adequate standard of living there. As the world market for copra weakened in the 1980s and the standard of living on the outer atolls went into decline, living standards in the urban centers started to rise dramatically from infusion of Compact funding. That this differential between rural and urban areas continues to grow is not in dispute, but no successful solutions for the inequity have been found.

The present economy of the Marshall Islands is a unique aggregate of three divergent but interlinked economic systems: (1) the traditional communal/distributive system, where scarce resources were shared in the interest of general survival; (2) the strategic economy, as a consequent of World War II and compensation for use of the area as a defense site by the United States in the interests of its national security; and (3) capitalism, which is regarded by some as the solution to economic problems in the Marshalls.

The values that underlie and shape the goals of the three systems are distinct. The traditional system enhanced survivability on the atolls by distributing available resources according to where they were most needed. Until recently, the strategic economy and the Compact of Free Association that it spawned appeared to promise greater economic security for the Marshallese people than had their traditional system. Given that the resources of the atolls are no longer adequate to support their populations without outside assistance, it is not immediately apparent which combination of the three economic systems will best serve the present and future needs of all the atoll people.

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