Pacific Food Guide

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The US Affiliated Pacific Region includes 10 jurisdictions with unique foods and food practices. Providing nutrition education to participants in this region is challenging because 2 different dietary guidelines are used: the US Dietary Guidelines with MyPlate and the Secretariat for the Pacific Community Dietary Guidelines. The purpose of this article is to describe the process used to develop a Pacific Food Guide, a conduit for linking the 2 dietary guidelines applied in the region. The Pacific Food Guide was developed, piloted, and evaluated as being useful in an introductory college-level nutrition course that serves the diverse student population of the US Affiliated Pacific Region. Nutr Today. 2016;51(2):72–81

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WHY A PACIFIC FOOD GUIDE?

Food Guides

Food guides are dynamic nutrition education tools[1] that serve as "encyclopedias of food." Food guides are critical resources for those designing programs and nutrition education materials, as well as for those who want to know more about food. Science-based advice featured in food guides often includes food and nutrient recommendations, identification of foods consumed by the target population, and nutrient content of those foods.[2] Since 1916, the US Department of Agriculture (USDA) has been publishing food guides with as few as 4 to as many as 12 food groups. These groups changed little over the years and included some combination of dairy, protein, grain, vegetables, fruit, and added energy-rich foods (fats, oils, and sugars).[1] Food guides often provide portion recommendations as a number or range of volumetric servings (eg, cups) to be eaten daily.

The US Dietary Guidelines

In the United States, the Dietary Guidelines for Americans serve as the basis of US nutrition policy and are updated every 5 years. A variety of icons have been used to represent the recommendations given in the Dietary Guidelines for Americans. For example, in 2011, the MyPlate[3] icon replaced MyPyramid as the primary nutrition education tool for promoting healthy eating. The Dietary Guidelines for Americans presents information in both scientific language (eg, limit consumption of saturated fat) and as food-based recommendations, sometimes including graphics and icons of food groups.[4]

Other Guidelines

Other countries and areas including but not limited to Singapore, Canada, Finland, Greece, Australia, and the South Pacific have their own guidelines.[5,6] Agencies such the United Nation's Food and Agriculture Organization and the World Health Organization recommend Food-Based Dietary Guidelines that are consumer friendly depicting familiar and accessible foods rather than lists of nutrient recommendations.[7,8] Developers of guidelines and icons have increasingly included foods familiar to ethnic and minority groups.

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No Specific Guidelines Exist for the US Affiliated Pacific Region

The US Affiliated Pacific region (US Pacific) includes the state of Hawai'i, the US territories of American Samoa and Guam, and the Commonwealth of the Northern Mariana Islands. In addition, the US Pacific includes the independent countries of the Federates States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau, who are in a Compact of Free Association with the US government and are here referred to as the Freely Associated States of Micronesia (Figure 1). These states have access to many US domestic programs. The unique relationship that all these jurisdictions have with the United States has been outlined in another publication.[9] They are all part of the Land Grant system,[10] one of the few unifying institutions across the Pacific Region. In addition, American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawai'i participate in Special Supplemental Nutrition Program for Women, Infants, and Children,[11] the Expanded Food and Nutrition Education Program,[12] and the Supplemental Nutrition Assistance Program.[12]

Two distinct dietary guideline systems are used in the US Pacific, the current edition of the Dietary Guidelines for Americans and a regional set, the Secretariat for the Pacific Community dietary guidelines.[6] The 2010 Dietary Guidelines for Americans, which featured a 5-food group system (fruit, vegetable, protein, grains, and dairy) together with the MyPlate icon,[3] is used in the Special Supplemental Nutrition Program for Women, Infants, and Children, the Expanded Food and Nutrition Education Program, and the Supplemental Nutrition Assistance Program. Concurrently, public health and health promotion programs use the Secretariat for the Pacific Community, which reflects foods of the region in a 3-food group system (body building, energy, and protective foods).[6] These 2 very different approaches to food group classification make it challenging to convey dietary information to people in the US Pacific. The Children's Healthy Living Program (CHL), established in 2011 as a partnership between the remote islands of the US Pacific and Alaska, is a community-based approach to preventing childhood obesity in the US Pacific.[13] The CHL identified a need for an up-to-date comprehensive

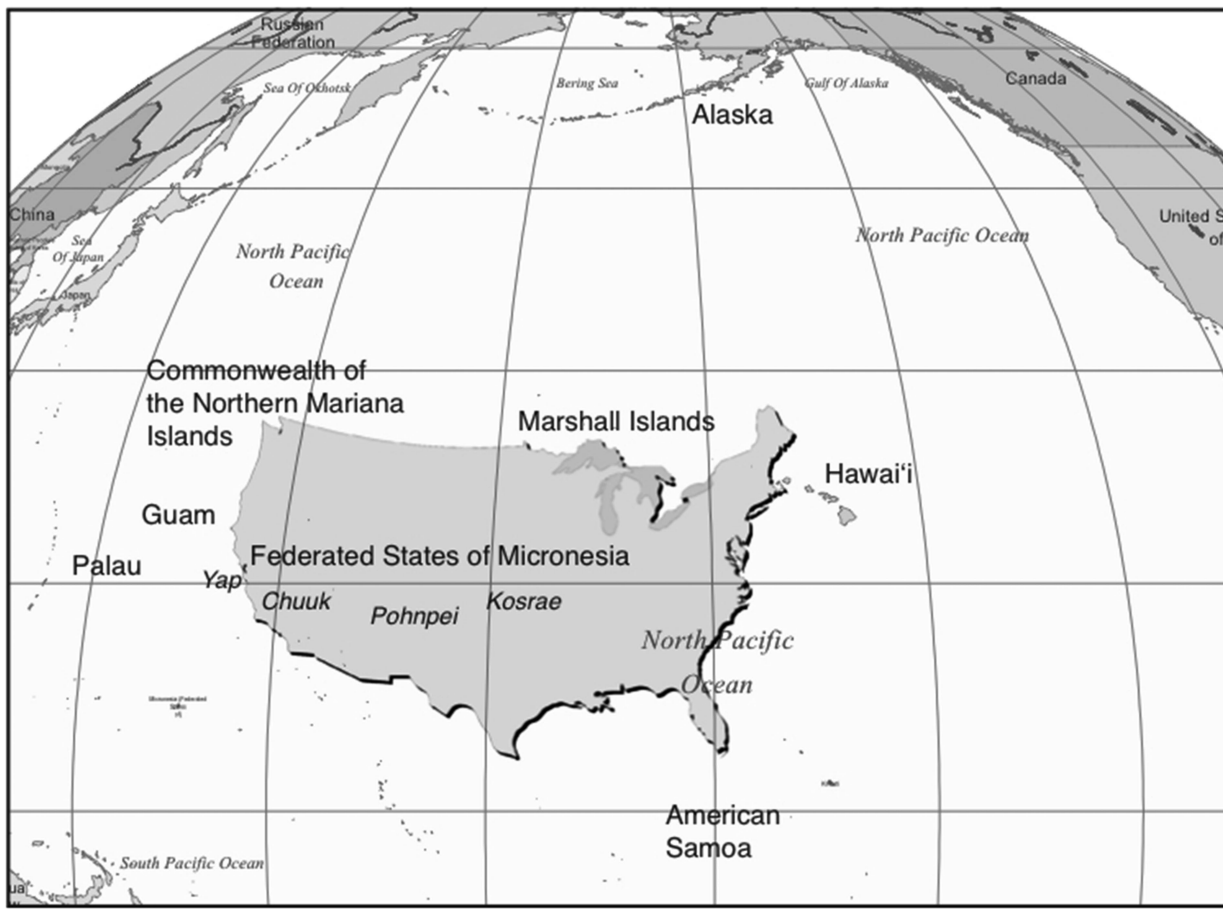

FIGURE 1. Map of the US Affiliated Pacific Region indicating the locations of American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Hawai'i, Republic of the Marshall Islands, the Republic of Palau, and the contiguous United States. The overlay of the contiguous United States, set between Hawai'i and Guam, indicates that the width of the contiguous United States at its widest point is just 400 miles short of the distance between these 2 Pacific islands.

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resource describing Pacific Island foods for use in training and culturally relevant nutrition education materials.[14,15] More information about this USDA funded initiative is available at: http://www.chl-pacific.org.

This article describes the Pacific Food Guide developed for use in an expansive underserved region that is covered by more ocean than land (Figure 1). The purpose of this article is to describe the development of the Pacific Food Guide and its use in a college-level introductory nutrition course taught in the US Pacific. Background information, not readily available, about the people and food practices of the remote, underserved populations of the US Pacific also is provided.

THE PACIFIC FOOD GUIDE

The Guide

The Guide is available at manoa.hawaii.edu/ctahr/pacificfoodguide. Figure 2 provides an example of an entry in the Pacific Food Guide. The Pacific Food Guide presents over 100 traditional and regionally sourced foods, omitting imported and highly processed foods such as canned meats and chips that have Nutrition Facts labels. The foods are organized into 3 general categories based on where they can be found: Walks Along the Ground (eg, animals like coconut crab, chickens, and pig), Chosen From the Sea (eg, seafood like fish, seaweed, and crustaceans), and Grown From the Ground (eg, plant foods like taro, coconut, and breadfruit). Unfortunately, nutrient composition data are unavailable for 60 foods included in the Pacific Food Guide. The lack of nutrient composition data for so many foods (Table) creates a challenge for researchers as well as nutrition educators and registered dietitian nutritionists serving the people of the US Pacific. The Pacific Food Guide is arranged to reflect the relationship between food systems and ecology, descriptions of the food,[16] and the regional languages, which lend context to food names and food subtypes and ensure that readers can identify a food without knowing its English or scientific name.

Another unique feature of the Pacific Food Guide is the use of a novel set of "pins" for both the 2010 Dietary Guidelines for Americans and MyPlate icon and the Secretariat for the Pacific Community dietary guidelines used

Breadfruit ***(Artocarpus altilis; Artocarpus mariannensis)***

USDA & SPC Food Groups: MyP Fruit; SPC Enrg

Traditional names
Chamorro – lemmai[1]; dokdok[2]
Chuukese – mai
Hawaiian – ulu
Kosraean – mos
Marshallese – ma
Palauan – meduu
Pohnpeian – mahi
Samoan – ulu
Yapese – zow; maai

Breadfruit is found in both [1]seedless and [2]seeded varieties in the Pacific. Varieties differ in leave shapes and fruit shape, size, and time of ripening (Secretariat of the Pacific Community, 2006).

Selection
Pick when mature but not yet ripe. A pole or long stick is helpful for harvesting fruits on the tree. It is best to pick from the tree before it hits the ground, as the fruit gets soft and damaged from the fall (Secretariat of the Pacific Community, 2006).

Storage
A seasonal crop, so preserve by fermenting, freezing or drying. Ripening can be accelerated by piercing the core and inserting salt water, already ripened breadfruit or wrapping in old cloths and leaves until soft (Secretariat of the Pacific Community, 2006).

Preparation
- Can be eaten at the mature green stage, when the fruit is still hard, and at the mature ripe stage, when the fruit is already soft.
- Can be eaten raw as a fruit or cooked.
- Seeds and very young leaves can be cooked and eaten.
- Can be barbecued with the skin on, or skinned with a knife and cooked.
- Pairs well with coconut milk and can be combined with wheat flour to make bread.
(Secretariat of the Pacific Community, 2006).

Photo Sources
NOAA
J. Hollyer

Nutrition Facts
Serving Size 5 oz. (140g)

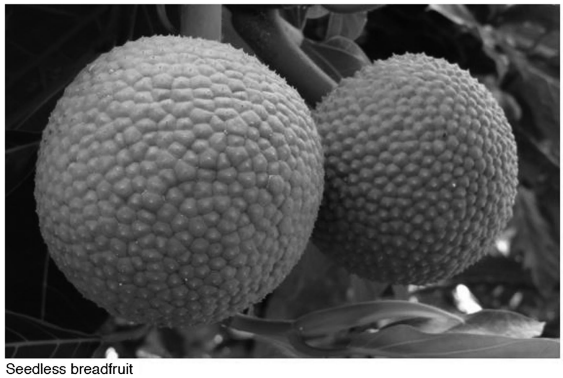
Amount Per Serving	
Calories 270	Calories from Fat 70
	% Daily Value*
Total Fat 8g	12%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 35mg	1%
Total Carbohydrate 41g	14%
Dietary Fiber 7g	28%
Sugars –g	
Protein 10g	
Vitamin A 8% • Vitamin C 15%	
Calcium 6% • Iron 30%	

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Breadfruit, raw



Seedless breadfruit

Seeded breadfruit

FIGURE 2. Excerpt on a food (breadfruit) from the Pacific Food Guide in which the scientific name(s), common name in English, and translations of a food are presented along with brief information on the physical appearance, selection, storage, preparation, nutrition facts, and dietary guideline pins are presented. MyP indicates MyPlate dietary guideline pin; SPC, Secretariat for the Pacific Community dietary guideline pin.

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TABLE Foods Consumed by Adults and Children in the US Pacific that Lack Food Composition Information

Food Category	Scientific Classification	Traditional Name(s)
Guide category: Walks Along the Ground		
Crab		
Coconut crab	*Birgus latro*	Chamorro—*ayuyu*/Chuukese—*amwatang*/Kosraean—*aci*/Marshallese—*chaninway*/Palauan—*ketat*/Pohnpeian—*emp*/Samoan—*ūū*/Yapese—*yaffi*
Land crab	*Johngarthia lagostoma*	Chamorro—*panglao*/Chuukese—*nipwei*/Hawaiian—*pāpa'i*/Kosraean—*acing*/Marshallese—*baru*/Palauan—*rekung*/Pohnpeian—*poru*, *rokumw*/Samoan—*pa'a*/Yapese—*ragumwu*
Dog	*Canis lupus familiaris*	Chuukese—*konak*/Hawaiian—*'īlio*/Kosraean—*kosro*/Marshallese—*kidu*/Palauan—*bilis*/Pohnpeian—*kidi*/Samoan—*maile*/Yapese—*gelagiu*
Fruit Bat	*Pteropus mariannus*	Chamorro—*fanihi*/Chuukese—*peute*/Hawaiian—*pe'a*/Kosraean—*fak*/Palauan—*olik*/Pohnpeian—*pwehk*/Samoan—*pe'a*/Yapese—*paiu sheiu*
Guide category: Chosen From the Sea		
Brown ribbon weed	*Dictyota* spp	Palauan—*char*
Crocodile	*Crocodylus porosus*	Hawaiian—*mo'o nui*/Palauan—*ius*/Yapese—*gaushe*
Curly fishing line	Chaetomorpha	Palauan—*char*
Emperor		
Blackspot	*Lethrinus harak*	Chamorro—*mafute'*/Kosraean—*srinac*/Marshallese—*rijun*/Palauan—*itotech*, *itoch*/Samoan—floa-vai/Yapese—*ligerigeri*, *uule*
Orangefin	*Lethrinus erythracanthus*	Chamorro—*lililok mañagu*/Kosraean—*srinkap*/Marshallese—*berak*/Palauan—*menges*/Pohnpeian—*kadek mwei toantoal*/Samoan—*filoa-apamumu*/Yapese—*orbwile*
Yellowlip	*Lethrinus xanthochilus*	
Yellowstripe	*Lethrinus obsoletus*	Chamorro—*mafute'*/Kosraean—*ik sruasra*/Palauan—*udech*/Pohnpeian—*kadek*/Samoan—*tolai*/Yapese—*sagurppiye*
Flower limu	Laurencia	Hawaiian—*limu pe'epe'e*/Palauan—*char*
Glassweed	Scinaia	Palauan—*char*
Large wire weed	Callophycus	Palauan—*char*/Samoan—*lima uaea*
Little wire weed	Gelidiella	Palauan—*char*
Maidenhair	Hypnea	Hawaiian—*limu huna*/Palauan—*char*
Mangrove Crab	*Aratus pisonii*	Chamorro—*panglao oron*, *atmangaog*/Chuukese—*nipwei*/Hawaiian—*pāpa'i*/Kosraean—*powac*/Marshallese—*jebarbar*, *baru*/Palauan—*chemang*/Pohnpeian—*elimoang*/Samoan—*pa'a*/Yapese—*ragiumwul liuwen maliile*
Mojarras	Gerreidae	Chamorro—*guåguas*/Marshallese—*ilmok*/Samoan—*matu*/Yapese—*yengaange*
Papery sea bubble	Colpomenia	Palauan—*char*

(continues)

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TABLE Foods Consumed by Adults and Children in the US Pacific that Lack Food Composition Information, Continued

Food Category	Scientific Classification	Traditional Name(s)
Parrotfish		
Bicolor	*Cetoscarus bicolor*	Chuukese—*marau*, *uufoor*/Marshallese—*mera*/Palauan—*beadl*, *ngesngis*/Pohnpeian— *mau*, *lawi*/Samoan—*fuga*, *laea*, *laea usi*/Yapese—*usha*, *yaregulungo*
Bullethead	*Chlorurus sordidus*	Hawaiian—*uhu*/Palauan—*derbetelloi*, *butiliang*/Samoan—*fuga-gutumu*/*figausi*, *laea-tuavela*/Yapese—*mwogweimwe*
Filament-fin	*Scarus altipinnis*	Palauan—*udoud ngelel*, *meskelat*/Samoan—*laea-sina*/
Gibbus	*Chlorurus microrhinos*	Palauan—*otord*, *chotord*/Samoan—*fuga*, *laea*, *laea usi*/*ulumato*, *galo*/Yapese—*umwashe*
Humphead	*Bolbometopon muricatum*	Chamorro—*palakse'*, *låggua*, *pachak*, *fohmo*, *atuhong*/Kosraean—*mwesrihk*, *koimokut*/Palauan—*berdebed*, *kemedukl*/Pohnpeian—*kemeik*/Yapese—*mamile gemasugulu*
Pacific longnose	*Hipposcarus longiceps*	Chamorro—*gualåfi*, *lågguan diso'*, *amariyu*/Chuukese—*aar*/Marshallese—*ek mouj*/Palauan—*ngyaoch*, *bergism*/Pohnpeian—*mwomw mei*/Samoan—*ulapokea*, *laeaulapokea*/Yapese—*lulef*
Palenose	*Scarus psittacus*	Hawaiian—*uhu*/Palauan—*mul*/Samoan—*laeamatapua'a*/Yapese—*gawegawe*
Redlip	*Scarus rubroviolaceus*	Chuukese—*amorochin*/Hawaiian—*palukaluka*/Palauan—*melekelattelebt*/Pohnpeian—*owen serehd*/Samoan—*laea-mala*, *laea-mea*/Yapese—*ngiicha*
Tan-faced	*Chlorurus frontalis*	Palauan—*mellemau*
Yellowband	*Scarus schlegeli*	Samoan—*fugamatapua'a*, *laea-tusi*/Yapese—*gawegawe*
Rabbitfish		
Forktail	*Siganus argenteus*	Chamorro—*mañåhak lesso'*, *hiteng kåhlao*/Kosraean—*luhluhk*, *muhlahp*, *nuesron*/Marshallese—*muramor*/Palauan—*meas*, *kelsebuul*, *beduut*/Samoan—*lo*, *loloa*, *'ofe'ofe*, *malava*/Yapese—*nnege*
Scribbled	*Siganus spinus*	Chamorro—*mañåhak ha'tang*, *sesyon*/Marshallese—*muramor*/Palauan—*reked*, *chepsall*/Samoan—*anefe*, *pa'ulu*
Red sea lettuce	Halymenia	Hawaiian—*limu lepe 'ula'ula*/Palauan—*char*/Samoan—*a'au*
Reindeer limu	Codium	Hawaiian—*limu wawae'iole*/Palauan—*char*
Rosy pudding plant	Meristotheca	Palauan—*char*
Runners and scads	Carangidae	Hawaiian—*akule*, *halalū*, *'ōpelu*, *kamanu*, *omaka*/Marshallese—*bob ere*
Rudderfish		
Highfin	*Kyphosus cinerascens*	Chamorro—*guili*, *guilen puengi*/Hawaiian—*nenue*/Marshallese—*bejrok*/Palauan—*komud*, *beab*/Pohnpeian—*keriker*, *kertakai*/Samoan—*mata-mutu*, *mutumutu*, *nanue*/Yapese—*reeli*
Lowfin	*Kyphosus vaigiensis*	Chamorro—*guili*, *guilen puengi*/Hawaiian—*nenue*/Palauan—*komud*, *beab*/Pohnpeian—*keriker*, *kerlel*/Yapese—*reeli*
Sea fan	Padina	Palauan—*char*/Samoan—*limu ili*

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TABLE Foods Consumed by Adults and Children in the US Pacific that Lack Food Composition Information, Continued

Food Category	Scientific Classification	Traditional Name(s)
Sea lettuce	Ulva	Hawaiian—*ʻĪlioha'a*/Palauan—*char*
Sea moss	Gracilaria	Hawaiian—*limu wawa*/Palauan—*char*
Sea oak	Sargassum	Hawaiian—*kala*/Palauan—*char*/Samoan—*limu vaovao*
Slippery cushion	Rosenvingea	Palauan—*char*
South sea colander	Hydroclathrus	Palauan—*char*
Spiny leaf	Turbinaria	Palauan—*char*/Samoan—*limu lautalatala*
Spiny sea plant	Acanthophora	Palauan—*char*/Yapese—*laariu*
Supreme limu	Asparagopsis	Hawaiian—*limu kohu*/Kosraean—*kohrmwek*/Palauan—*char*/Samoan—*limu*
Surgeonfish and unicornfish		
Bluebanded	*Acanthurus lineatus*	Chamorro—*hiyok*/Kosraean—*kui*/Palauan—*belai*/Pohnpeian—*pwulak*, wakapw/Samoan—*pone*, *palagi*, *alogo*/Yapese—*felange*
Bluespine	*Naso unicornis*	Chamorro—*guåsa*, *tåtaga*/Hawaiian—*kala*/Kosraean—*ik koac*/Palauan—*chum*/Pohnpeian—*pwulangkin*/Samoan—*pone*, *palagi*, *ume-isu*/Yapese—*giume*
Convict	*Acanthurus triostegus*	Chamorro—*kichu*/Hawaiian—*manini*/*Kosraean*—*lasrfol*/Marshallese—*kuban*/Palauan—*chelas*/Samoan—*pone*, *palagi*, *manini*/Yapese—*limeoniu*
Orangspine	*Naso lituratus*	Chamorro—*hangon*/Chuukese—*puna*/Hawaiian—*umaumalei*/Kosraean—*ik koac*/Palauan—*cherangle*/Pohnpeian—*pulangkin*/Samoan—*pone*, *palagi*, *ili'ilia*, *umelei*/Yapese—*bwulegalei*
Yellowfin	*Acanthurus xantopterus*	Chamorro—*hugupao dångkolo*/Hawaiian—*pualu*/Kosraean—*kuhpaht*/Marshallese—*kopat*/Palauan—*mesekuuk*/Yapese—*yefale*
Tender golden weed	Solieria	Palauan—*char*
Thorn grass	Eucheuma or Kappaphycus	Palauan—*char*
Trevally		
Bigeye	*Caranx sexfasciatus*	Chamorro—*i'e'e*, *tarakitu*/Hawaiian—*pake ulua*/Kosraean—*srapsrap*, *lalot*, *sra*/Marshallese—*ikbwij*/Palauan—*esuuch*/Pohnpeian—*oarong*, *adam*/Samoan—*malaulimatalapo'a*/Yapese—*langiuwe*, *yetame*
Brassy	*Caranx papuensis*	Chamorro—*i'e'e*, *tarakitu*/Palauan—*iab*/Pohnpeian—*oarong pil*/Samoan —*malauili-sinasama*
Bluefin	*Caranx melampygus*	Chamorro—*i'e'e*, *tarakitu*/Hawaiian—*'omilu*/Kosraean—*srap*/Marshallese—*lane*/Palauan—*oruidl*/Samoan—*atugaloloa*, *malauli-apamoana*
Giant	*Caranx ignobilis*	Chamorro—*mamulan*/Hawaiian—*ulua aukea*/Kosraean—*srap*/Palauan—*cherobk*, *chederobk*/Samoan—*sapo-anae*/Yapese—*langiuwe*; *yapwu*
Tubular green weed	Enteromorpha	Hawaiian—*limu ele'ele*/Palauan—*char*

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TABLE Foods Consumed by Adults and Children in the US Pacific that Lack Food Composition Information, Continued

Food Category	Scientific Classification	Traditional Name(s)
Wrasse		
Humphead/ Napoleonfish	*Cheilinus undulates*	Chamorro—*tåsen guåguan*, *tangison*/Kosraean—*kuhsruhl*/Marshallese—*lappo*/Palauan—*terrid*, *ngimr*, *mamel*/Pohnpeian—*merer*, *poaros*/Samoan—*sugale*, *lalafi*, *malakea*, *tagafa*/Yapese—*maame*
Tripletail	*Cheilinus trilobatus*	Chamorro—*lalacha' måmå'te*/Palauan—*ngimr*/Samoan—*sugale*, *lalafi-matamumu*/Yapese—*porose*

to easily identify where foods fit into each set of guidelines. These will be modified to reflect any changes in the 2015 Dietary Guidelines for Americans. As seen in the breadfruit example (Figure 2), each entry also includes a description and photograph of the food together with selection, storage, and preparation information.

Initially, the Pacific Food Guide was designed as a supplement to an online introductory nutrition course and distributed to students in an Adobe Portable Document Format (pdf); it is now available as a searchable Web site. Access to this resource allowed the instructor to make the instruction more relevant to the students and the clients they intended to serve by using familiar foods like taro and breadfruit rather than legumes such as black beans (not typically found in the Pacific) in discussions about complex carbohydrates in the diet.

Developing the Guide: Assessing Stakeholder Interest in a Pacific Food Guide

Introductory nutrition is taught in most of the 2- and 4-year colleges in the Pacific, but there are no textbooks addressing the unique foods and practices of the region. The University of Hawai'i at Mānoa has the only accredited nutrition program in the region. In 2013, an e-mail survey of recipients of the CHL quarterly newsletter (n = 413, with 43 responding) agreed (89%) that integrating Pacific content into an introductory nutrition course would be beneficial for the development of a trained nutrition workforce for the Pacific. Students (n = 1738, with 25 responding) who completed the introductory nutrition course between Fall 2011 and Spring 2013 were also surveyed, and of those, 76% indicated benefit. Comments from survey respondents included the following:

- *We need to start talking about food and culture in regards to a person's sense of place—otherwise it is not relatable.*
- *Incorporate Pacific foods into MyPlate/Dietary Guidelines.*
- *Ethnic and cultural diversity of the region demands a curriculum, which differs from the typical American/mainland diet, presented in regular nutrition classes.*

With this supportive feedback, the "Traditional Food Guide for Alaska Native Cancer Survivors," used to teach introductory nutrition though the Alaska Rural Nutrition Service,[17] was selected as a model. In addition, a "place-based learning" learning approach, which links education to the physical and cultural place of learning, was used as an effective way to enhance education in indigenous populations.[18] A food guide that reflects the US Pacific's food system and rich cultural and ethnic diversity is a tool for "place-based learning." The process for developing the Pacific Food Guide included a review of available resources on the foods of the region to identify traditional and local foods consumed, to identify nutrition facts for food items from the USDA Nutrient Data Laboratory, Hawai'i Foods Database, and the Hawai'i Seafood Council, and to include foods without composition information (eg, coconut crab) without a Nutrition Facts label; and designing of the nutrition facts labels to reflect the macronutrient and micronutrient content using the Genesis R&D SQL Version 9.9.2.0 Product Development and Labeling Software from Elizabeth Steward Hands and Associates Research; determination of serving sizes for foods based on Nutritional Labeling and Education Act standards; creation of unique set of pins to weave together the Dietary Guidelines for Americans and Secretariat for the Pacific Community dietary guidelines; integration of the unique languages of the US Pacific through inclusion of the traditional names of foods; organization foods into 3 neutral categories to reflect the unique ecosystem of the region: Walks Along the Ground for animals, Chosen From the Sea for seafood, and Grown From the Ground for plants; and inclusion of brief descriptions on physical appearance, selection, storage, and preparation. Some foods with similar characteristics were grouped together (eg, citrus fruits and the parrotfish family). Pictures were identified for each food item using open source photographs and original photographs from the CHL network.

Introducing the Pacific Food Guide Into an Introductory Nutrition Course

One student wrote "I enjoy the topics that book [Guide] covers. It's something I can use and apply to my diet." Reviewers from the CHL Pacific network and to other experts in the field suggested incorporating more cultural

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context, more specific details on the foods from certain islands, and further technical development (eg, photo improvement) of the Pacific Food Guide. The second edition has been used to teach 4 introductory nutrition courses in the 2014–2015 academic year at the University of Hawai'i at Mānoa.

Next Steps

The Guide will continue to evolve to include new information on frequently consumed foods in the region and their nutrient composition, as that information becomes available. This resource was developed with extramural funding, and options for sustainability include publishing the Guide as a printed book, an eBook, or an online database. It is expected that the Pacific Food Guide will also be used outside the US Pacific for those teaching courses on cultural practices of foods, cultural competency, and community nutrition. The Pacific Food Guide also has application for working with Pacific Islander populations in the clinical and community/public health settings, both within and outside of the US Pacific.

BACKGROUND ON THE US AFFILIATED PACIFIC REGION (US PACIFIC)

For those outside the Pacific region it is important to put the Pacific Guide in context.

The Region's People

The US Pacific is diverse, with indigenous ethnicities including the natives of Hawai'i (Native Hawaiian) and American Samoa (Samoan) of Polynesian ancestry and the natives of the Federated States of Micronesia (such as Pohnpeian, Chuukese, Yapese, Kosraean), Palau (Palauan), Republic of the Marshall Islands (Marshallese), Guam (Chamorro), and the Commonwealth of the Northern Mariana Islands (Chamorro) of Micronesian ancestry. Native Hawaiians and other Pacific Islanders constitute 1.2 million people (0.4%) of the total US population in 2010.[19] The predominant nonindigenous racial/ethnic groups include non-Hispanic whites and Asians.[20] Mixing (eg, Pacific Islander and Asian groups) and migration of ethnic populations in the Pacific Region is widespread.[21,22]

The Indigenous Food System

Before first contact with people from outside the Pacific, the food systems of Pacific Island peoples reflected the islands' unique ecosystems and environments. The islands relied on the ocean's bounty[23]; however, other types of food, either indigenous or from canoe transport origin,[24] were available depending on the islands' endemic resources. For example, the high volcanic islands of Hawaii supported an integrated agricultural system referred to as the *ahupua'a* (land division/watershed),[25] whereas the island of Pohnpei in the Federated State of Micronesia depended on agroforestry.[26] In contrast, the atoll environment of the Republic of the Marshall Islands had food crops capable of growing in sandy soils, such as pandanus and coconut.[27] Division of food production by gender, distinguishing food between genders, and special food rules were common practices.[25,28,29]

The Role of Food in Pacific Islanders' Traditional Life

Despite the vast size of the Pacific, the Pacific Islands were composed of great canoe voyaging societies that regularly traveled the Pacific Ocean before first contact with Westerners,[24] lending to the sharing of similar food practices across Pacific Island cultures. For example, nature was believed to be the ultimate source of life, as both a spiritual and physical place; humanity and nature were intertwined.[28] Life was structured around fishing, planting, and harvesting/gathering crops. Food was essential for survival and central to creating and maintaining social relationships. Food was shared among family, friends, and the community—a reciprocal practice.[29] Food was used to demonstrate respect for guests, elders, chiefs, and men, as well as for social prestige.[30] Occasions for food sharing brought together different sections of the community, with the preparation and eating of food having an important symbolic function.[28] Feasts were and remain a prominent part of Pacific life today.[25]

Despite the region's ethnic diversity, Pacific Islanders consumed many of the same land-based foods such as taro, yam, breadfruit, cassava, sweet potato, banana, plantain, pandanus, and tapioca. Each ethnic group had a preferred starchy staple food such as taro, breadfruit, or yam, which contain many micronutrients[31] but required cooking to remove toxic substances or irritants. Meat, such as chicken or pig, or seafood was served with starchy foods to create a meal.[28]

Food's Role in the Pacific Islands After Western Contact

Travelers from outside the US Pacific arrived from as early as the 1500s in the Mariana Archipelago[32] to the 1700s in American Samoa[33] and Hawai'i.[32] Missionaries were among the first outsiders to establish a permanent presence,[34] followed soon after by the development of plantations and other industries, which led to an influx of Filipinos, Chinese, Japanese, and others seeking work as laborers[35] and introducing new foods and practices. Although cultural food practices generally remained intact, imported foods, including rice, flour, canned meat, and other canned goods, were incorporated into the diet.[36]

The Noncommunicable Disease Epidemic in the Islands

The US Pacific has one of the highest rates for obesity-related, noncommunicable disease in the world,[9,37] which

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has led to a state of emergency being declared by the Pacific Island Health Officers Association.[38] In addition, the region has a low proportion of health professionals trained in noncommunicable disease prevention, 1 component of the World Health Organization's 2013–2020 Global Action Plan to prevent and control noncommunicable diseases.[39] An unhealthy diet is one of the major contributors to noncommunicable disease development, making nutrition training especially important for the region. There are no registered dietitian nutritionists in the Freely Associated States of Micronesia, only 5 in the Commonwealth of the Northern Mariana Islands, 10 in Guam, and 363 in Hawai'i, at the time of this publication.[40,41]

SUMMARY

The Pacific Food Guide will enhance the ability of nutrition and extension educators, public health, and other health professionals to prepare culturally appropriate food and nutrition materials for children and adults of the US Pacific both living in the region and on the mainland. This is especially urgent since Pacific Island people experience some of the worst diet-related health disparities that can be prevented or managed, in part, with lifestyle change. Incorporating the Pacific Food Guide into instruction of introductory nutrition classes across the region is 1 strategy to make the material more student centered. Dietitians and other healthcare professionals working in clinical settings can recommend dietary strategies using foods that are affordable, accessible, and preferred by Pacific Island peoples.

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