

SURVEY OF FISHING ACTIVITIES IN TOKELAU

Introduction

Tokelau (Fig. 1) consists of three low-lying atolls — Nukunonu, Fakaofu and Atafu — located between 8° and 10° S latitude, and 171° and 173° W longitude. The mid-2003 population estimates for Tokelau was 1500 people.

Although Tokelau's land area is only 12 km², its exclusive economic zone (EEZ) is around 290,000 km², bordering five other Pacific Island nations (the Republic of Kiribati to the north, the Cook Islands to the east, American Samoa and Samoa to the south, and Wallis and Futuna to the southwest). Around 15 per cent of Tokelau's EEZ borders international waters to the northeast and west.

Subsistence fishing is an important component of everyday life in Tokelau, and the development of fisheries is the main opportunity for economic development. Set in this context, a joint Secretariat of the Pacific Community (SPC) and Pacific Islands Forum Fisheries Agency (PIFFA) mission was undertaken from 28 August to 10 September 2003. The main aim of this mission was to gather information for drafting a national tuna fishery development and management plan, with SPC focusing on the development aspects and PIFFA focusing on management issues. The secondary aim of the mission, and the focus of this article, was the collection of sex disaggregated data, through household survey questionnaires, on Tokelauan fishing activities.

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Household survey form and methodology

The questionnaire used for the household surveys was developed as part of the fish aggregating device (FAD) research project conducted in Niue and the Cook Islands from 2001 to 2004, and reported in *Fisheries Newsletter #113*. The survey form consisted of five main question areas. General fishing activities by household members (father, mother, sons, daughters, aunts, uncles, etc.) were recorded with a percentage of fishing time attributed to each of the 10 fishing methods listed. The number of canoes and boats per household

was also recorded, with details about of each craft and motor noted. Specific information about canoe and boat use outside the reef was recorded, along with fishing methods used and the percentage of fishing time attributed to each method. Estimated catch from both canoes and boats fishing outside the reef, as well as any processing that was undertaken (e.g. gilling and gutting, filleting, smoking, salting and drying, etc.) was entered onto the form. The survey form also included questions about people's knowledge of marine protected areas.

At each of the three atolls, the aim was to interview as many of the households as possible in the limited time available. Wherever possible, the head of the household was interviewed. Interviews were conducted in English, although local interpreters were used on each atoll when the interviewee was not comfortable answering in English. To assist in identifying houses, New Zealand Overseas Development Assis-

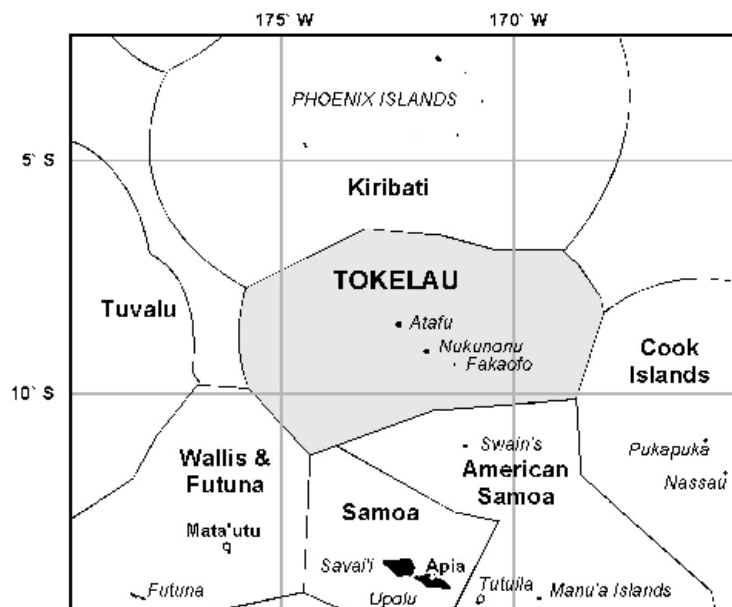


Figure 1: Tokelau, its EEZ and neighbouring countries

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tance/Tokelau Public Works Department maps (2001) were used for each atoll.

Survey results

Surveys were conducted opportunistically in the three to four days spent at each atoll, allowing interviewers to work around official meetings and arranged activities. The Tokelau 2001 census data provided baseline information on household numbers, although this only covered the number of actual houses on each atoll (Table 1). To get a better understanding of the actual number of households on each atoll at the time of the survey, prominent people such as village elders from each atoll were asked to provide an estimate of household numbers (Table 1). From this the percentage coverage was calculated for each atoll (Table 1), which ranged from 61.3 per cent on Atafu to 84.5 per cent on Nukunonu.

Two teams were used wherever possible to conduct the surveys. Each team consisted of two people, an interviewer and an interpreter. Surveys were conducted at people’s houses, outside meeting places and in common areas where local people were gathered (Fig. 2). In several locations, community kitchens provided an excellent venue as groups of peo-



Figure 2: Kim (right) interviewing the head of a household on Atafu with translation assistance from Ms Malia Daleb (left)

ple gathered, and people could be taken aside one by one without affecting the cooking or food preparation activities.

Table 2 presents the overall results from the community survey in regard to the number of households involved in various fishing activities. It should be noted that all but one household, a retired widow, was involved in some form of fishing activity, which highlighted the dependence of Tokelauans on harvesting marine products as their main protein source.

Over 60 per cent of households used their canoes and boats with outboard motors to fish outside the reef.

The actual fishing activities conducted at each atoll are the same (Fig. 3), however, the percentage of time attributed to each activity changed by atoll. On Atafu, around half (48%) of all fishing effort was focused in the lagoon and reef area, with reef fishing and gillnetting accounting for around 22 and 16 per cent of fishing effort, respectively. In contrast, spearfishing, diving, reef gleaning and baitfishing combined only accounted for 10 per cent of total fishing time. When fishing outside the reef, Atafu fishermen mainly trolled (20%) and fished in mid-water (14%) for tunas and other pelagic species, or bottomfished (10%) to reduce fuel costs.

Table 1: Estimate of survey coverage by atoll

Atoll	Census (2001) data on house numbers	Local estimate of household numbers (September 2003)	Number of households surveyed	Percentage coverage based on 2003 estimates
Atafu	83	75	46	61.3
Fakaofu	80	70	58	82.9
Nukunonu	66	58	49	84.5
Total	229	203	153	75.4

Table 2: Summary of data collected during the household surveys conducted in Tokelau

Atoll	Number of h/holds surveyed	Number of people covered	People per h/hold	H/holds fishing	Percent of h/holds fishing	Number of canoes	Number of boats	Number h/holds fishing outside reef	Percent h/holds fishing outside reef
Atafu	46	299	6.5	46	100.00%	31	37	32	69.60%
Fakaofu	58	320	5.5	57	98.30%	3	86	47	82.50%
Nukunonu	49	280	5.7	49	100.00%	4	56	30	61.20%
Total	153	899	5.9	152	99.30%	38	179	109	71.70%

On Fakaofu, fishermen also spent around half (51%) of their fishing effort inside the reef, with gillnetting (15%), reef fishing (12%), spearfishing (8%) and diving (7%) being the main fishing methods used. Outside the reef, fishing effort on Fakaofu was the same as on Atafu, with trolling (18%) and mid-water fishing (13%) for tuna and other pelagics, and bottomfishing (13%) being the main methods used. Fishermen on Nukunonu spent more than half (57%) of their time fishing outside the reef, with bottomfishing being the main method used (21%), followed by trolling (18%) and mid-water fishing (11%) for tuna and other pelagics. Fishing inside the reef at Nukunonu accounted for 43 per cent of fishing effort, with gillnetting (12%), reef fishing (10%), reef gleaning (7%) and diving (6%) being the main methods used. Across the three atolls, trolling was the main method used, followed by bottomfishing, reef fishing and gillnetting.

To identify the main people involved in the different fishing activities, sex disaggregated data was collected, and the results are presented in Figures 4 (a) and (b) on page 37 and 38.

Fathers, sons and other males were the main household members involved in fishing activities at all three atolls, whether fishing inside or outside the reef. When

fishing outside the reef (trolling, mid-water fishing, flying fishing and bottomfishing), mothers, daughters and other females only made up a very small percentage of the effort at Atafu, and an even smaller percentage at Fakaofu. Women at Nukunonu were not involved in fishing outside the reef at all.

Mothers, daughters and other females were involved in some inshore fishing methods, although males still dominated. Females accounted for just over 50 per cent of the reef gleaning effort, and around 40 per cent of diving effort, with most of the diving effort directed at harvesting clams. Females were also involved in gillnetting and reef fishing, but again at low levels. Overall, there was slightly more female fishing effort on Fakaofu (16%) compared with Atafu (11%) and Nukunonu (9%).

One interesting point that came out of the survey was the recent change in craft being used, from traditional outrigger canoes to outboard-powered aluminium dinghies. This is partly attributed to the lack of

suitable timber (large tree trunks) on Nukunonu and Fakaofu, however, there is also a convenience factor as these can be ordered from overseas and delivered by cargo boat (Fig. 5). Atafu still has a reasonable number of outrigger canoes, although many of these are falling into disrepair and will probably be replaced with aluminium dinghies in the future.

The authors hope that in years to come, a similar survey will be undertaken to document changes that will have occurred between this and the future survey. The authors would also like to thank all those who assisted with the data collection on the different atolls, especially Ms Fenuafala Fafoi, Ms Malia Daleb and Ms Hina Tuia.



Figure 5: Four new aluminium dinghies being delivered to one of the atolls in Tokelau

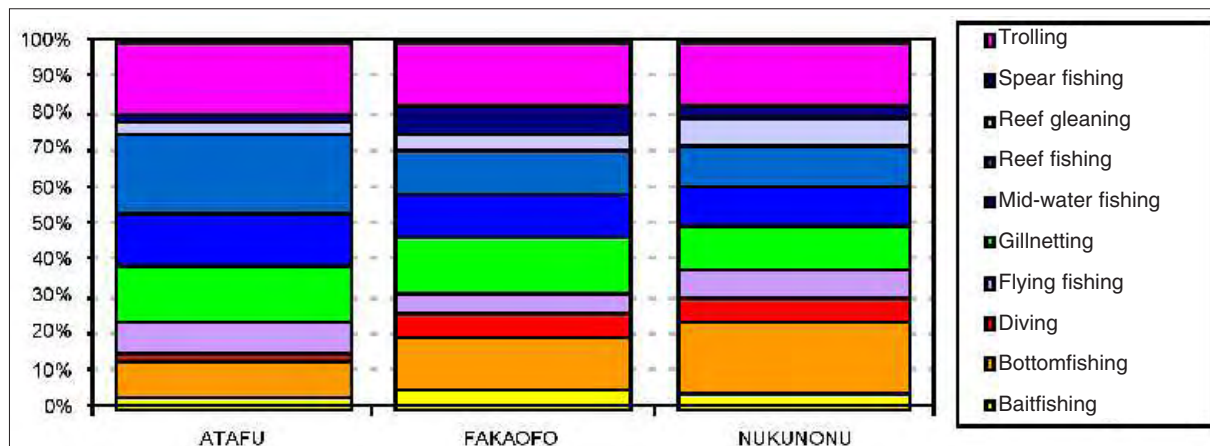


Figure 3: Percentage of fishing effort by method and atoll surveyed

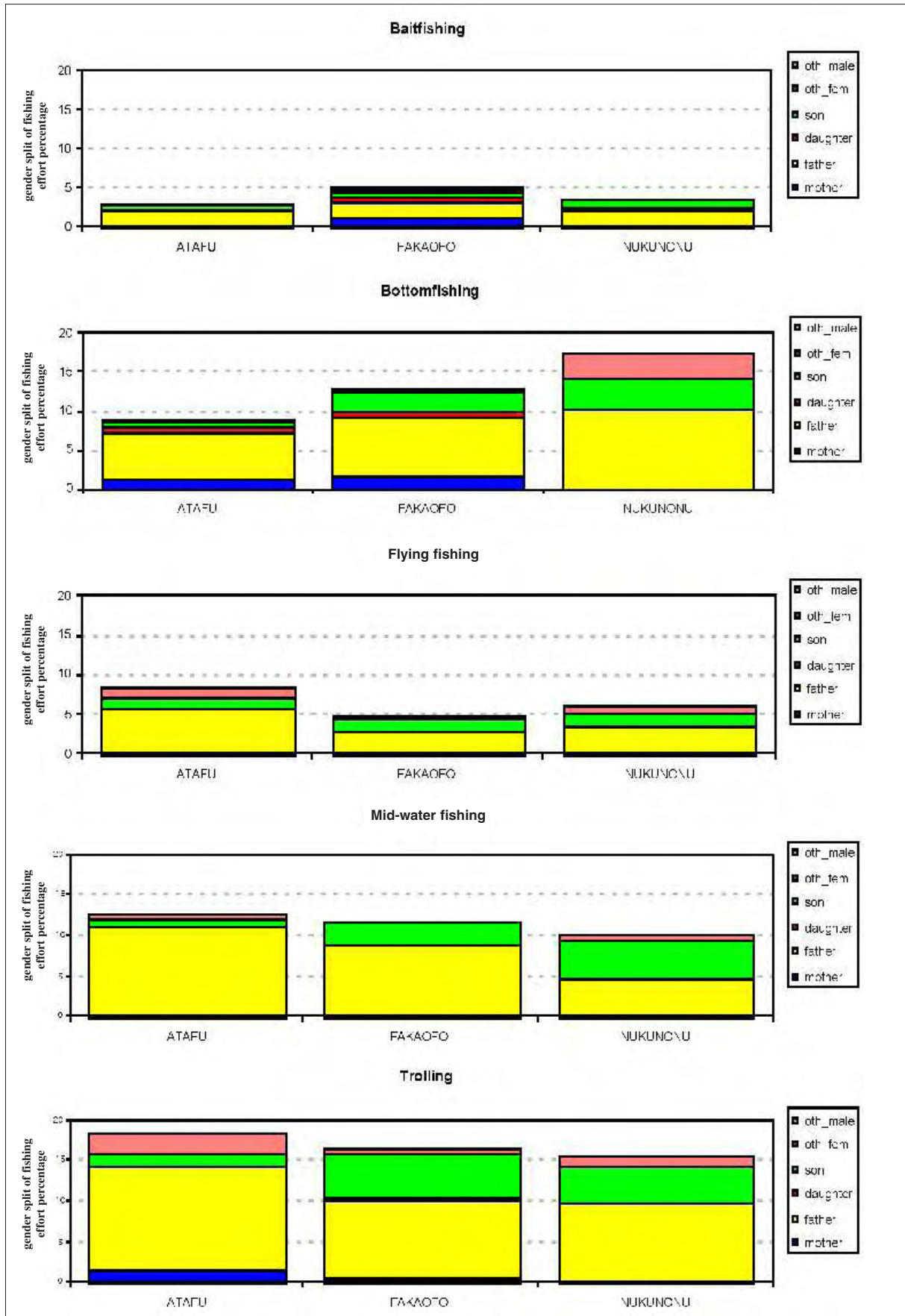


Figure 4 (a): Gender split of fishing effort by fishing method for the three atolls

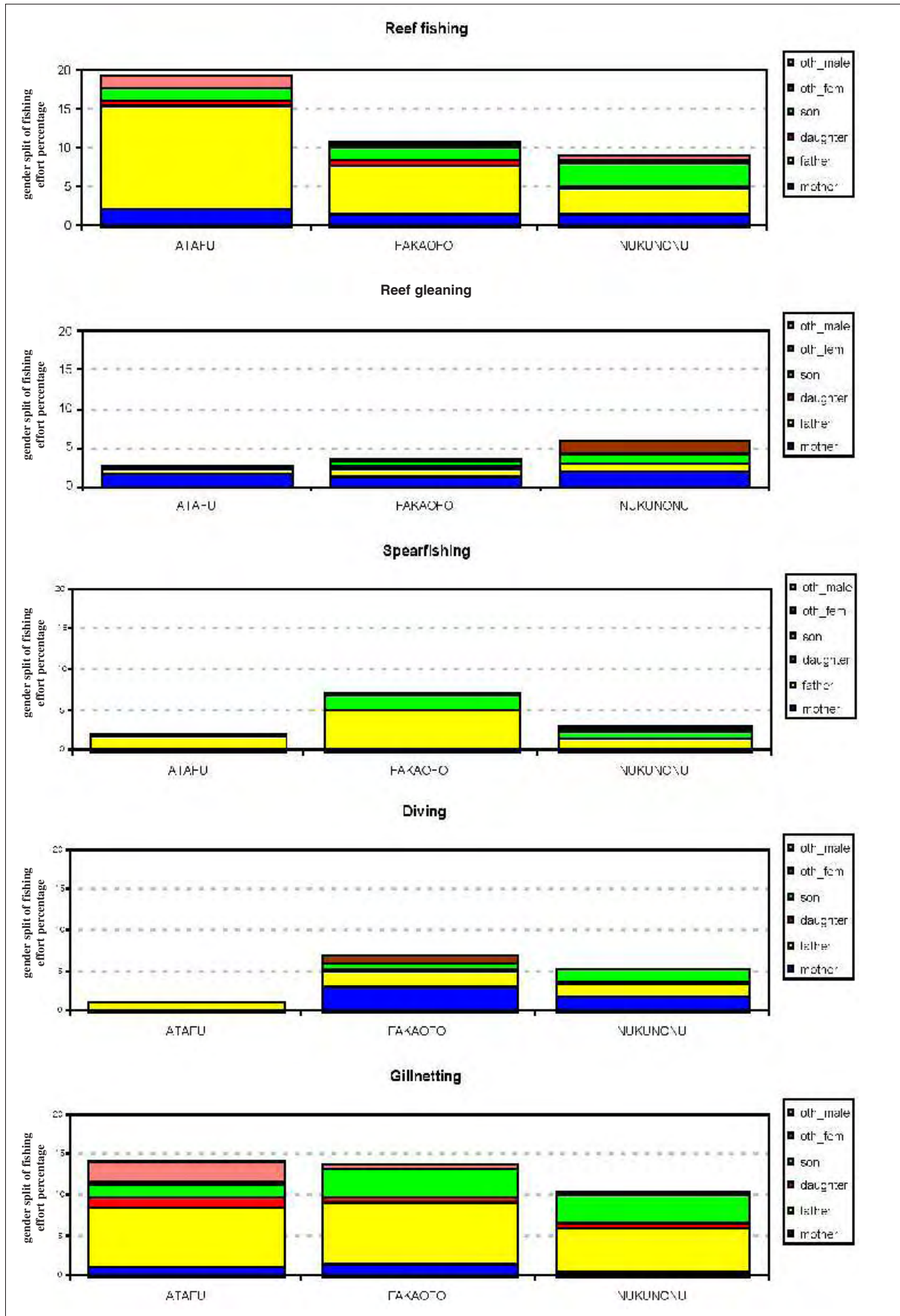


Figure 4 (b): Gender split of fishing effort by fishing method for the three atolls