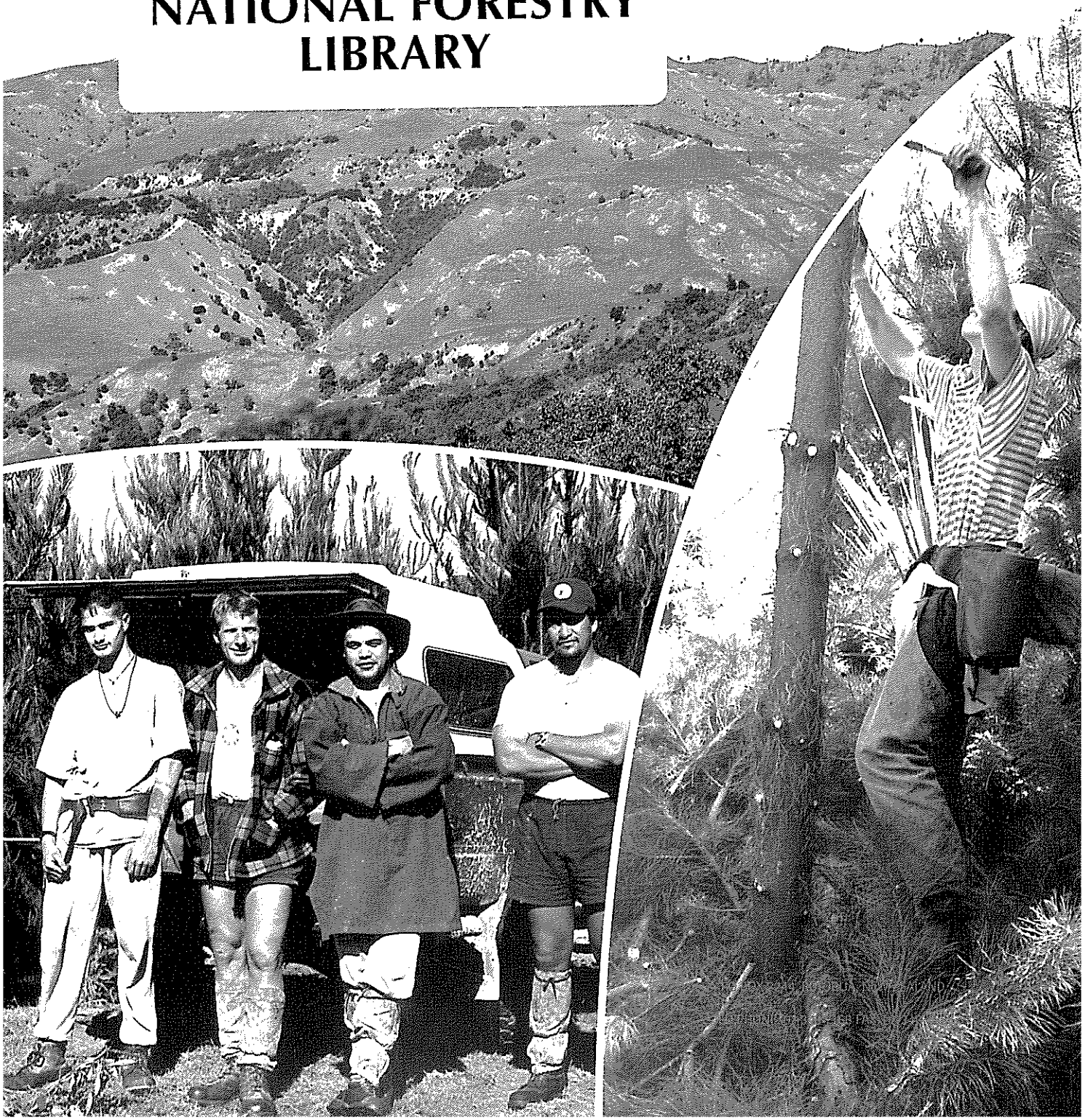
Liro limited

PROJECT REPORT

PR - 64

EAST COAST SILVICULTURE WORKFORCE 1996

Tina Cummins
Janelle Byers



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EAST COAST SILVICULTURE WORKFORCE 1996

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EXECUTIVE SUMMARY

The East Coast Forestry Project (ECFP) is a Crown funded effort with the aim of planting 7000 hectares of commercially productive forest each year on eroding and erodible land in the East Coast region of the North Island of New Zealand. The objective of the ECFP is to promote contiguous commercial forestry, as a means of controlling soil erosion and providing employment and regional development. A joint LIRO/Government funded project was undertaken to determine the effectiveness of the ECFP in providing employment and regional development. This was achieved through the use of a regional survey of the East Coast silvicultural workforce; 36 contractors and 158 crew members were interviewed. The key findings were:

- Sixty-two percent of these workers had started work in silviculture since 1993.
- Over 70% of the surveyed workforce were Maori, of these, 81% were from tribes within the boundaries of the ECFP. A large proportion of the workforce was local.
- The average age of the contractors was 36 years and the crew was 26 years. In 1995, the average age for the total working population of New Zealand was 34 years.
- Over half of the East Coast silviculture workforce lived in a city, and travelled (1.3 hours on average) to work on a daily basis.
- The outdoor environment continued to be the main attraction of a job in silviculture; 40% of workers cited this reason alone. A quarter worked in silviculture because it was the only job available to them.
- Nearly half did not plan to be in silviculture in five years time, continuing the historical trend of high turnover rates and instability within the New Zealand silviculture workforce.
- The average fortnightly take home pay for these silvicultural workers was $400 to $600 per fortnight. The 1995 national average fortnightly take home pay for males was $1308. Silviculture workers on the East Coast were being paid well below the national average wage, although this may in part be explained by the seasonal nature and differing payment methods of silvicultural work.
- Sixty-five percent of the workforce said that they held a FIRS Module.
- The East Coast silviculture workforce appeared to be increasingly reliant on the contractor and independent trainers for formal training.
- It was encouraging to find that the majority of crews (83%) had a safety plan and held regular safety meetings.

INTRODUCTION

In 1992, the National Government announced the East Coast Forestry Project (ECFP). This project was initiated in 1993, and aimed to establish 7,000 hectares of commercially productive forest per annum, on eroding and erodible land in the East Coast region of the North Island. The project is administered by the Ministry of Forestry, with funding for grants provided by the Crown.

The afforestation project has many potential benefits, including reducing the impact of erosion and flooding on both hillslopes and downstream communities, increasing employment in a region with high unemployment rates and low employment potential, and contributing to regional growth, development and revenue. In 1992 and 1993, 12,000 hectares of new forest was approved for planting, with the aim of having 200,000 hectares of forest planted over the next 28 years. By July 1996, 20,000 hectares had been approved for planting under the scheme.

One result of this project has been a considerable increase in the number of silviculture operations working on the East Coast, initially involved with planting, and later with pruning and thinning of the new forests. One of the objectives of this study was to find out whether this increase in silvicultural work has resulted in growth in the silvicultural workforce in the East Coast region, and thus whether some of the objectives of the ECFP are being fulfilled, including reduced local unemployment and an improved regional economy.

It is only recently that we have been able to determine with more than anecdotal information and informed guesses the ethnic composition of the New Zealand forest workforce. A 1993 study of the Otago/Southland forest workforce found that 8.7% of the logging and 21.3% of the silviculture workforce were Maori (Byers and Adams, 1995).

The 1994 New Zealand Forest Owners' Association (NZFOA) Workforce Census found that of the total NZ forest industry workforce, 52% of the silvicultural and 41% of the logging workforce were Maori (Byers, 1995). Strong regional variations existed in the proportion of Maori in the workforce, and not surprisingly the highest proportions of Maori workers were found in East Coast, Central North Island and Northland.

ACKNOWLEDGMENTS

LIRO acknowledges the following companies and their silvicultural contractors and crews for their co-operation and participation in the survey: Juken Nissho Limited, P. F. Olsen and Company Limited, Rayonier New Zealand Limited, Ngati Porou Forests Limited, Fletcher Challenge Forests Limited, and Carter Holt Harvey Forests Limited.

SURVEY METHOD

A survey of all the silviculture contractors and crews in the East Coast region was carried out in October 1996. "Silviculture" covers all those operations involved with the establishment and tending of a forest: planting, releasing, pruning, thinning, pest and weed control and plotting (mensuration).

The location of each crew was obtained from the relevant forest owner, and with their permission, individual survey forms were delivered to all workers and contractors for completion. Wherever possible, visits were made before work, during smoko and after work, to minimise disruption and ensure optimal co-operation.

The respondents' questionnaires could not be identified by either the answers provided or any other information obtained. Completion of the questionnaire was optional, and participants could pass on any of the questions. Typically, completion of the form took 20 minutes.

The questionnaire (Appendix One) addressed the following issues:

- Demographic information: age, gender and ethnicity
- Education and training: satisfaction with training, Forest Industry Record of Skills modules (FIRS)
- Recruitment and turnover
- Hours of work and remuneration
- Safety issues and accidents

The contractor (or foreman) answered additional questions on labour turnover, absenteeism, transportation, safety audits, crew size and equipment. An opportunity was provided for additional comments.

SURVEY AREA

The boundary of the survey extended from Hastings north to East Cape and west to the Mohaka River (Figure 1). This encompasses land eligible for assistance under the ECFP. It should be noted however, that not all of the crews were working in areas covered by or companies involved in the ECFP at the time of survey.

Figure 1 - Map of survey boundary

RESULTS AND DISCUSSION

Survey Size

A total of 194 survey forms were completed. Thirty-six questionnaires were completed by prime contactors and 158 by silviculture crew members.

Personal Details

Age

The mean age of the contractor group was 36 years (range 20 to 66 years), while the crew had a mean age of 26 years (range 16 to 49 years), making them nearly 10 years younger (on average) than the contractor group.

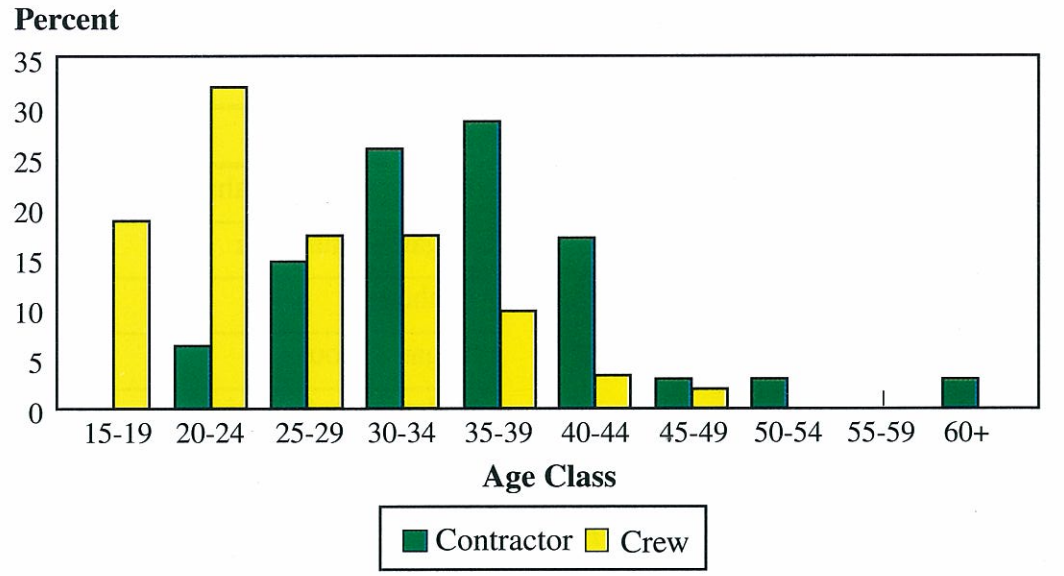

Figure 2 - Age distribution of 1996 East Coast silviculture workforce

Figure 2 shows the age distribution of the silviculture workers and contractors surveyed. The 1994 NZFOA census of the national forestry workforce (Byers, 1995), found a mean age (nationally) of 26 years for silvicultural workers. These figures can be compared with the mean working age of 34 years for the total New Zealand population (Statistics New Zealand, 1996). The average age of these East Coast silvicultural workers was considerably lower.

The workforce was dominated by males; only one of the respondents was female.

Marital Status and Dependents

Over half of all crew members interviewed were single (54%), and 46% were married or in a de facto relationship. Twenty-five percent of the contractors surveyed had two dependents (also the average) while 75% had either one or no dependent.

Half of the crew members had no dependents, and 30% had either one or two, the average was one. The range for both groups was 0 to 7 dependents.

Ethnicity

In this East Coast survey, 72% of respondents identified themselves as Maori; this shows the ongoing importance of silviculture to Maori as a source of employment. In 1994 Maori comprised 76% of the East Coast silvicultural workforce (Byers, 1995).

In 1994 Europeans accounted for half of the total forest workforce, but only 38% were involved with silviculture nationally and only 22% of the East Coast silvicultural workforce were European, (Byers, 1995); this has remained unchanged. In this East Coast survey only 5% of the workforce identified themselves as Pacific Islanders (Figure 3), lower than the figure obtained by the NZFOA Census.

Tribal Affiliation

As seen by the survey results, a larger proportion of the silviculture workforce were Maori. Their tribal affiliation(s) were used to determine whether they were from local or outside areas, to determine the effectiveness of the ECFP in providing employment to the local area.

In total, 81% of workers were from iwi within the boundaries of the ECFP, 19% had iwi affiliations outside the project boundaries. Forty-five percent identified themselves as Ngati Porou; it is noteworthy that such a large proportion of the workforce was comprised of (predominantly young) Maori from local iwi. Figure 4 illustrates iwi boundaries for the North Island.

Table 1: Tribal Affiliation

Tribe/Iwi	Total (%)
*Te Aitanga-a- Mahaki	5
*Ngati Kahungunu	14
*Tuhoe	9
*Ngati Porou	45
*Whanau-a-Apunui	2
*Ngati Tamanuhiri	2
*Ngati Awa/Ngariki	2
*Ngaipo	1
*Ngati Gahanui	1
Ngapuhi	6
Te Arawa	5
Tainui	3
Ati Awa	2
Ngati Tuwharetoa	2
Ngati Koriki	1
TOTAL	100

* Denotes Iwi within ECFP Boundary

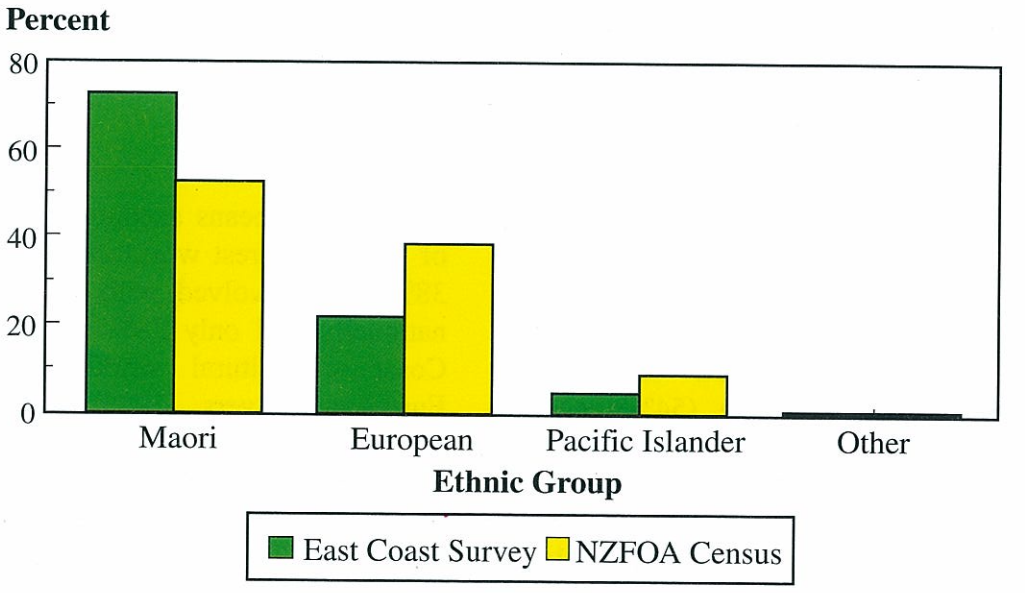

Figure 3 - Ethnic comparison of East Coast and national silviculture workforces

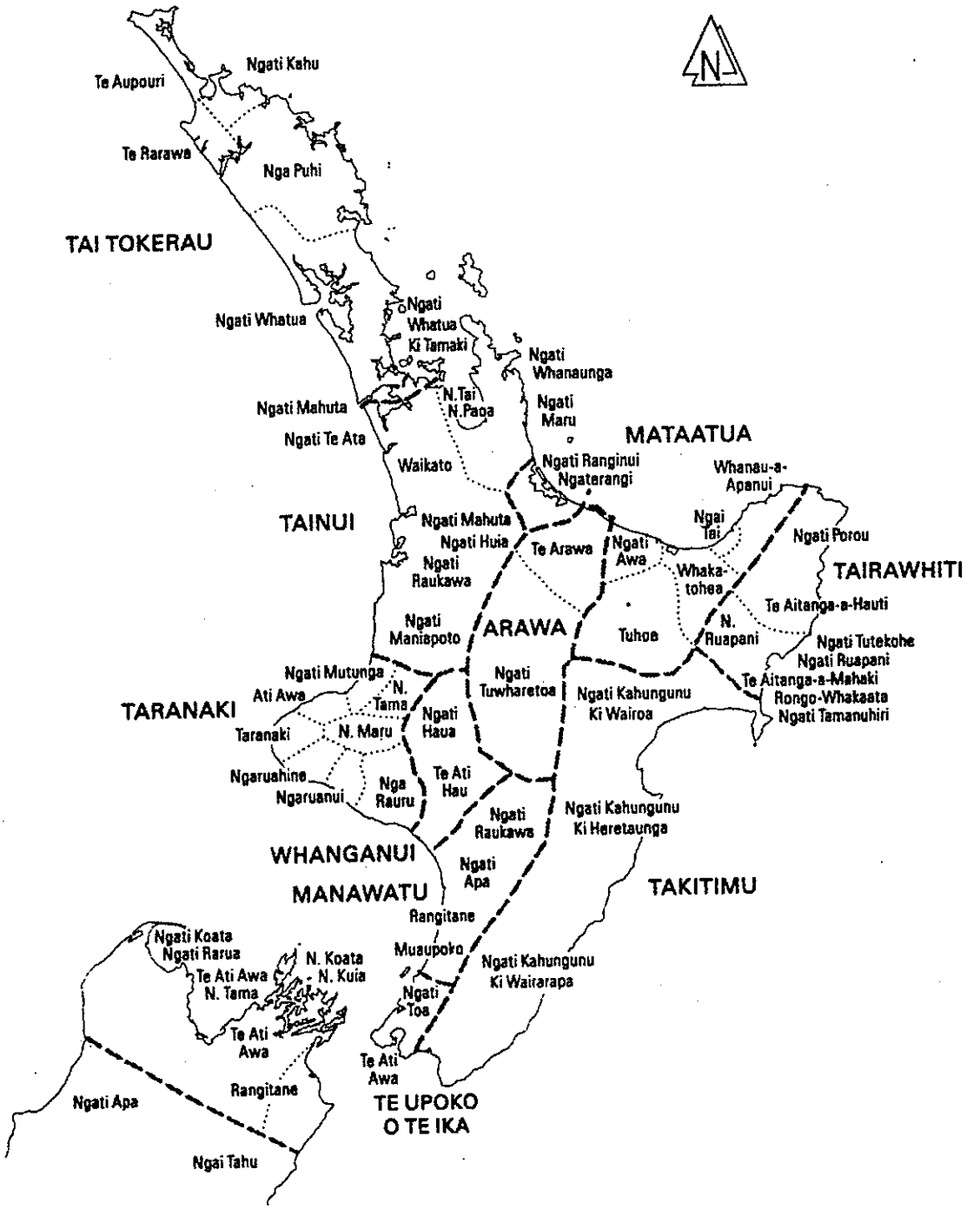

Figure 4 - North Island Iwi boundaries (Source: Kelly and Marshall, 1996)

Residential Location

Table 2 shows the residential pattern of silviculture workers on the East Coast. In a similar survey of the Otago/Southland workforce (Byers and Adams, 1995), silviculture workers most commonly lived in small towns. The East Coast shows a different pattern, with 56% of workers living in a city.

Table 2 - Residential location of East Coast silviculture workers

	Percentage
Rural	14
City	56
Small Town	30
TOTAL	100

To determine the effect of the ECFP on residential movements, the respondents were asked where they lived and for how long they had lived there. Ninety percent lived within the survey boundaries, 37% were resident in Gisborne. Only 10% lived outside the survey boundary. The highest number of non-local workers were from Kaikohe.

While 43% of those surveyed had always lived on the East Coast, 23% had lived in this region for one year or less. The greatest influx of the now resident population was from the Bay of Plenty (27%). The Auckland region followed at 12%, a reflection in part on training schemes currently operating within the industry, where unemployed persons are offered the opportunity to learn silviculture skills.

Education

There were no substantial differences between the amount of schooling completed by contractors or crew members. The highest proportions of both groups had spent one to three years at secondary school, with an average of 2.3 years. Only 12 of the total group had completed less than one year of secondary schooling; they were all in the 40+ age bracket. Table 3 shows the amount of secondary schooling completed by contractors and crew members.

Table 3 - Time spent at secondary school

	Years spent at secondary school		
	<1	**1-3**	**>3**
Contractor	5	53	42
Crew	5	60	35
Both	7	52	41

The longer period in schooling translated into more secondary school qualifications. Nearly 60% of the total group had passed School Certificate, and 31% held either Sixth Form Certificate or University Entrance. A further 10% had completed Form 7, and had received either Higher School Certificate or Bursary.

These figures were significantly higher than those recorded in a Logging Workforce survey (Gaskin et al., 1987), where 18% of the workforce had School Certificate, and only 3% held University Entrance or Sixth Form Certificate.

This higher level of formal education could be attributed to the raising of the school leaving age from 15 to 16 years, possibly in conjunction with the high unemployment rate in the East Coast region. In 1994 unemployment was 11% in the East Coast region, but by 1995 the figure had dropped to 8.5% (Statistics New Zealand, 1996).

Post Secondary Education

Subsequent to leaving school, 55 respondents (28%) had pursued post school education, 76% had undertaken a polytechnic training course. Several New Zealand polytechnics offer Forestry courses of varying duration, which teach students aspects of silviculture, logging or both (Byers, 1994). Forestry courses accounted for only 2% of post secondary education choices. Six respondents (11%) had attended university after leaving secondary school.

Recruitment and Retention

Source of Current Job

Just under half the workers surveyed had obtained their current job after being told of it by a friend (47%). Seventeen percent had responded to an advertisement, a further 22% were told of the job by a relative. Eleven percent of respondents had obtained their job by approaching the contractor directly, or by being approached by the contractor. Three percent stated a combination of friend/ advertising or friend/ relative.

First Job After Leaving School

A change from indoor to outdoor work was made by 33% of workers when they left the first jobs they had obtained after leaving school and transferred into silviculture. Thirty-four percent started in silviculture or logging immediately after leaving school, while 19% had worked in the farming sector before changing to silviculture. Nearly three-quarters had gone directly from school into a physically demanding occupation such as shearing or labouring, which would have aided their transition into silviculture.

One-third (34%) of workers had a parent involved in either silviculture or logging. Two had both parents involved in the forest industry. These workers would have had an earlier exposure to the forest industry than other survey participants; a further 20% were from a farming background.

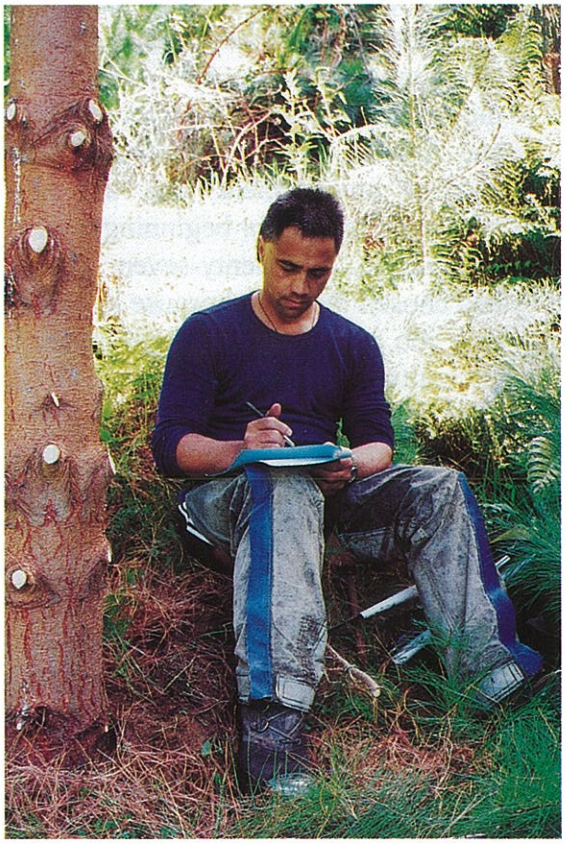

Figure 5 - Contractor completing a questionnaire

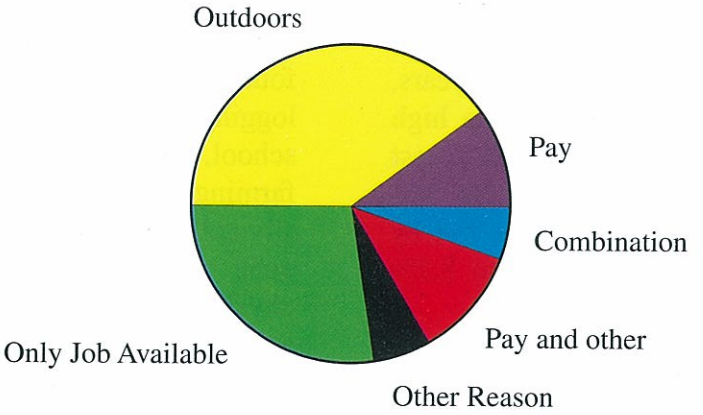

Figure 6 - Reasons for choosing to work in silviculture

Reasons for Starting Work in Silviculture

Outdoor work continued to be the most common reason for entering the silviculture workforce. Just under 40% cited "outdoor environment" as their main reason for starting work in silviculture, and 11% cited a combination of pay and outdoor environment (Figure 6). A survey of the Otago/Southland workforce (Byers and Adams, 1995) also found that the outdoor environment was the most important reason for beginning work in silviculture. Twenty-seven percent had chosen their job because it was the only job available, while 10% were in silviculture for the pay (Figure 6). In total, 34% were involved in silviculture because it was (solely or in combination with other reasons) the only job available.

This could indicate two situations: it may have been easier to find employment in silviculture than in other occupations, and/or one-third of the current workforce have a poor perception of silviculture, and had taken up silviculture work because they felt that they didn't have any other options.

Time Worked in Current Crew

In this survey, over half the respondents (52%) had spent less than one year with their present crew, while one third had been with the same crew for between one and five years. Only 8% had been with the same crew for more than five years.

The amount of time spent with the current crew ranged from two days to 20 years, with an average of 4.5 years for the contractors and one year for crew members. The 1994 NZFOA workforce census, found that silviculture workers had spent between 10 months and three years with their current crew, with an average of two years. Crews in the East Coast and Hawkes Bay regions surveyed in 1994 had spent less time with their current crew than crews in other regions.

Number of Other Crews Worked For

Participants were asked how many other crews they had worked in. Just under half (49%) had worked in one or two other crews. Only 1% had worked in 10 other crews, and 7% had only worked in their current crew. This reflects the industry's historically high turnover rate within silviculture.

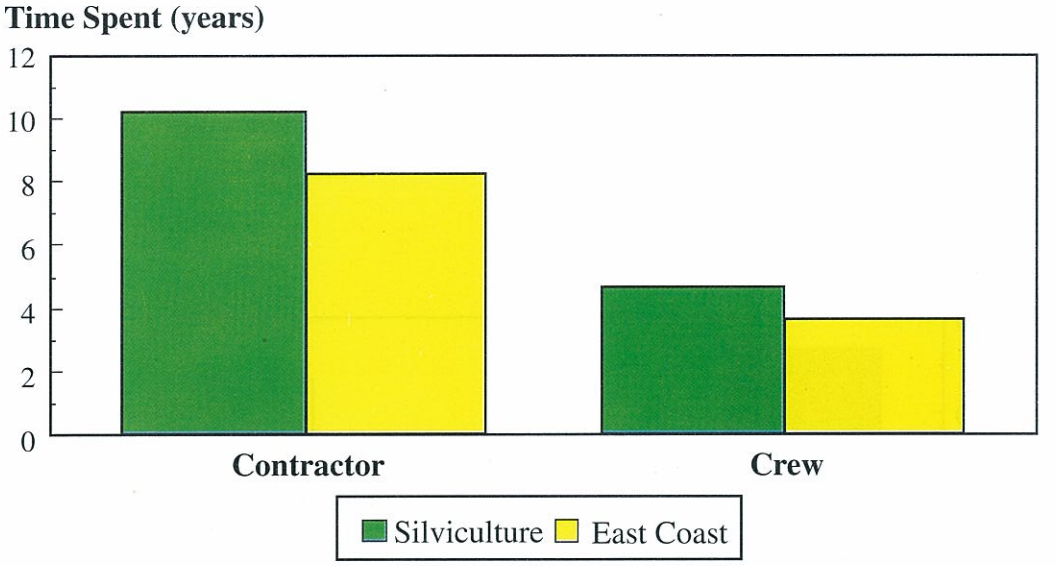

Figure 7 - Length of time in Silviculture and in Silviculture on the East Coast

Length of time in silviculture

Figure 7 shows that the contractors surveyed had been involved in silviculture for 10.2 years (on average), in contrast with the crew members average of 4.8 years. Contractors had also been involved in silviculture on the East Coast for longer than their crew members (Figure 7). The NZFOA workforce census (Byers, 1995) found that silviculture workers on the East Coast had spent an average five years in silviculture (compared with four years on average nationally), similar to the results obtained from this survey.

Future Intentions

When contractors and crew were asked whether they would still be in silviculture in five years time, 55% stated "yes". However 45% said "no", and this may reflect the continued instability of the silviculture workforce on the East Coast. When asked what they would like to be doing in five years time, the most common response was "logging" (23%), which shows that harvesting was perceived as a more attractive option by some of the workforce.

East Coast Forestry Project

A key objective of this survey was to identify the impact of the Government funded East Coast Forestry Project on attracting people into silviculture in the East Coast region. Participants were asked whether the project had influenced their choosing to work on the East Coast, 75% said "no".

Possibly they were unaware of the existence of the project, or were working in an area or for a company who were not involved with the ECFP at the time of survey (because of the anonymity of the survey it was not possible to separate these responses). However, as 68% of all respondents had started work in silviculture after the inception of the project in 1993, it could be the impact of project-related establishment coming into effect, with job-creation showing up as a result of increased forest investment in this region.

Figure 8 shows that 74% of the contractors started work before the ECFP was initiated, and that 68% of the workers had started work after the inception of the ECFP. It is difficult to attribute this solely to the ECFP, especially given the high turnover rate in silviculture, however it is encouraging that so many of those working in silviculture on the East Coast were locals.

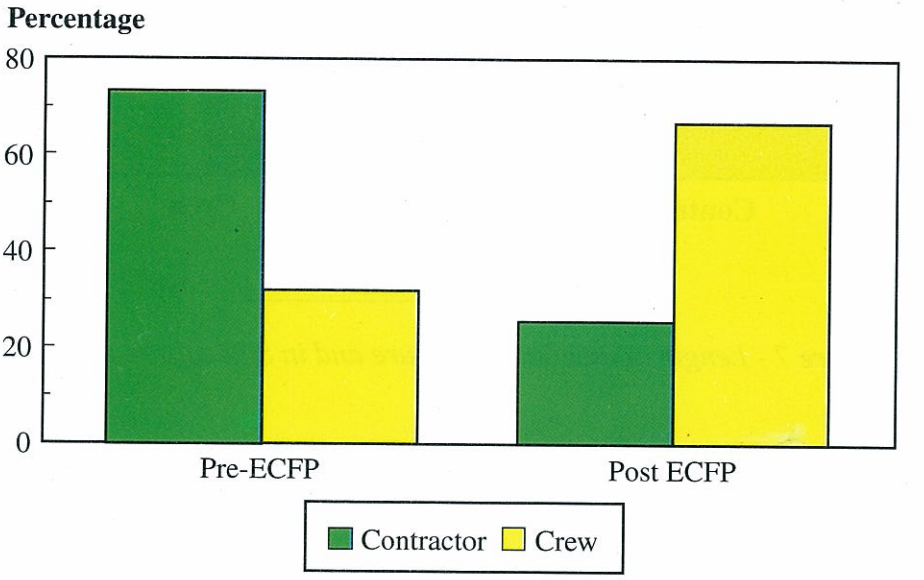

Figure 8 - When did you start working in silviculture on the East Coast?

Figure 9 - An East Coast silvicultural crew

Accidents and Downtime

Accident Record

The impact of the Health and Safety in Employment (HSE) Act (1992) cannot be underestimated, and companies are seeking to reduce the rate of accident and incident occurrences within their forests. Nearly 70% of workers had not had any accidents during the last five years.

Lost Work Days

The average lost time per accident for the entire workforce over the last five years was five days, consistent with results from the Forest Industry Accident Reporting Scheme (FIARS) administered by Liro (Parker, in press). As shown in Figure 10, most injuries resulted in one to five days lost time, also consistent with ARS data.

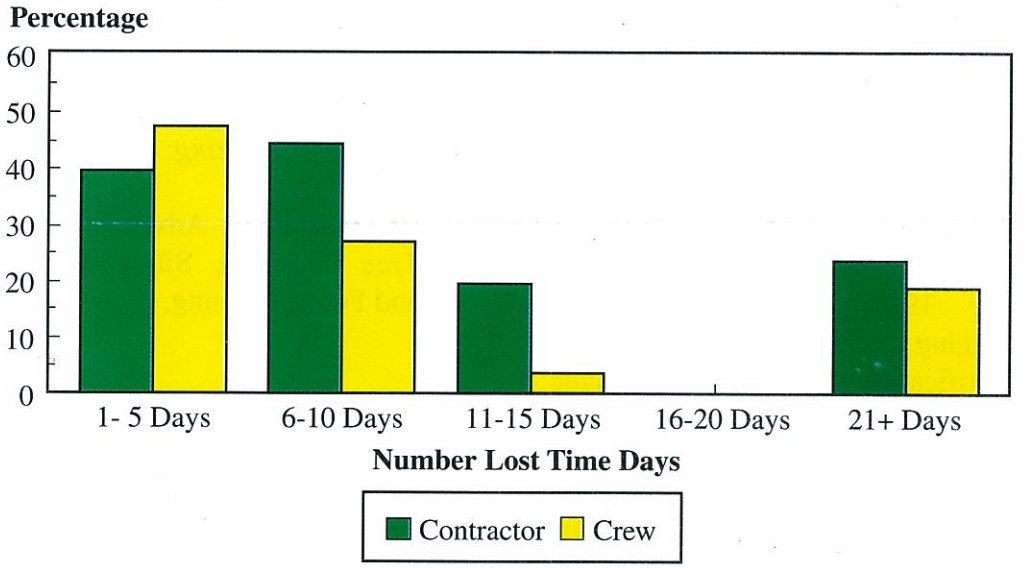

Figure 10 - Number of Lost Time Days per Accident

Training in Silviculture

The level of formal training in silviculture work has increased as a result of the requirement by the NZFOA to have "...100% of people working in the forest qualified or in training for the work they are undertaking by 1 January 1996". Training has been found to improve work methods, lower production costs, increase productivity, and improve the overall morale of workers (Evans, 1984). Polytechnics and associated training schemes, aim to produce trainees who will quickly reach production speed in the work environment. This will reduce the amount of time and money required to get the trainees working as efficient and safe crew members.

Satisfaction With Training

Participants rated their level of satisfaction with the training they had received on a scale of 1 (very unsatisfied) to 7 (very satisfied). Most were satisfied with their training, 43% said it was "okay" and 39% said they were "very satisfied". On average contractors and crews rated their training at 5 (Figure 11).

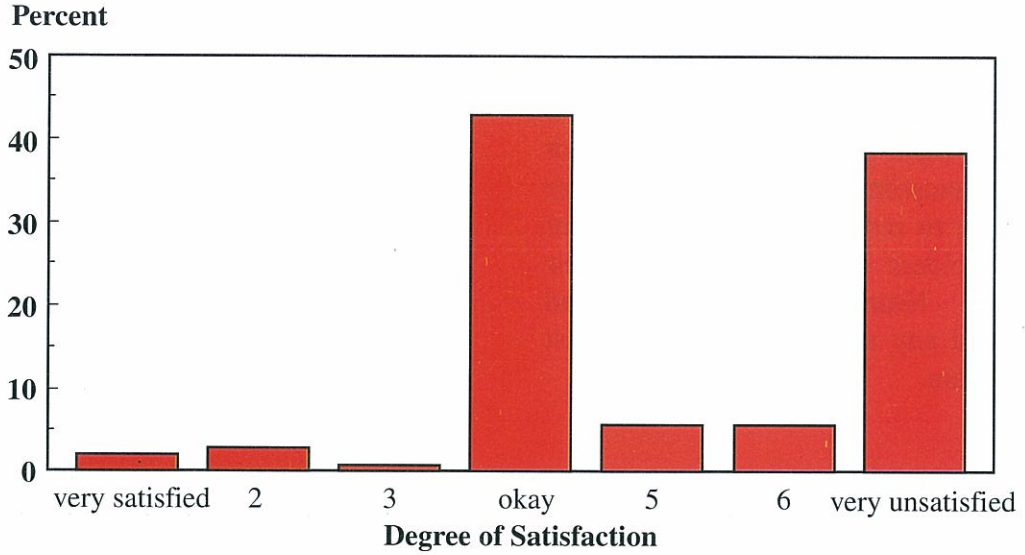

Figure 11 - Level of satisfaction with training

Forest Industry Record of Skills (FIRS)
The FIRS system was introduced in July 1992, replacing the earlier Logging Certification and Forest Skills Certification systems. The scheme is administered by the LFITB, which functions on behalf of the Forest Industry Training and Educational Council (FITEC) to meet the training requirements of the industry.

The participants were asked whether they were aware of the FIRS system, and whether they held any FIRS modules. Although 91% knew what FIRS modules were, only 65% said that they had attained one or more modules.

Table 4 illustrates the various modules available and the number of workers who held or who were undergoing training for the module. The data collected on modules was not checked against records held by either LFITB or the forest company. There may have been confusion about what training constituted a FIRS module. The most commonly held modules were: General Requirements, Advanced First Aid, Tree Selection, Silvicultural Pruning and Forest Planting.

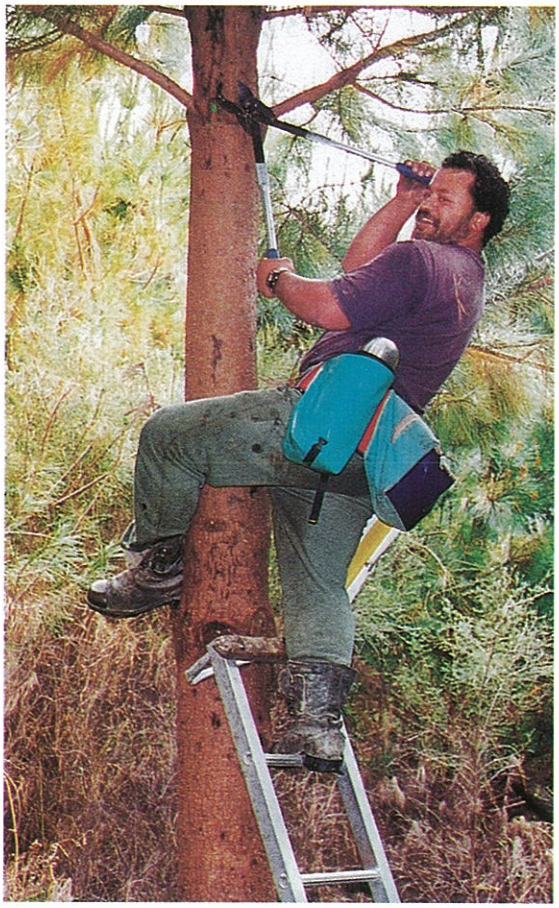

Figure 12 - A pruner at work

Table 4-Status of FIRS modules

FIRS Module and Module Number		Number of Modules Held	Number of Modules Workers in Training For
General Requirements	**1.1**	63	15
Chainsaw Maintenance and Operation	**1.6**	27	4
Forestry Knowledge	**1.2**	5	8
Tree Selection	**1.3**	43	17
Plotting for Forest Operations	**1.4**	9	11
Forest Mensuration	**1.5**	1	0
Tree Felling: Stage 1	**1.7**	8	3
Wire Rope and Accessories	**1.8**	2	1
Advanced First Aid	**1.10**	49	2
Fire Control: Stage 1	**1.12**	21	5
Planting Site Preparation	**2.1**	4	3
Forest Planting	**2.2**	35	12
Tree Releasing	**2.3**	13	14
Silvicultural Pruning	**2.4**	36	20
Thin to Waste (Small Trees)	**2.5**	11	7
Handling Chemicals	**2.6**	10	4
Thin to Waste (Large Trees)	**2.7**	4	1
Tree Processing on the Landing	**3.1**	2	0
Log Making	**3.2**	1	0
Tree Felling: Stage 2	**3.3**	1	0
Tree Felling: Machine Assisted	**3.4**	1	0
Breaking Out: Ground Based Extraction	**3.5**	1	0
Breaking Out: Cable Hauler Extraction	**3.6**	0	0
Machine Operating: Ground Based Extraction	**3.7**	1	0
Machine Operating: Cable Hauler Extraction	**3.8**	0	0
Machine Operating: Loader	**3.9**	0	0
Machine Operating: Mechanical Processors	**3.10**	0	0
Hauler Systems	**3.11**	0	0
Salvaging Windthrown Trees	**3.12**	0	0

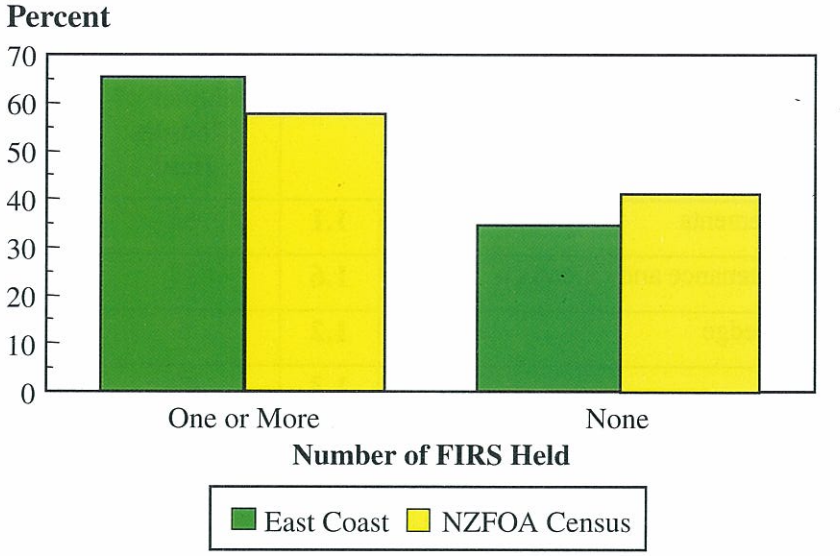

Figure 13 - FIRS Modules Held

The 1994 NZFOA workforce census, reported that 58% of the East Coast workforce had attained a FIRS module, in 1996 that figure had risen to 65% (Figure 13). This is encouraging in light of the NZFOA's training objective, but indicates that there is still a substantial proportion of the workforce without qualifications.

Who was Carrying Out the Training?

Nearly 20% of the workforce said that they were training themselves for FIRS modules. This may be due to the presence of certified trainers in the contractor group, or informal on-the-job training which may have occurred, that is the workers shared their knowledge with each other. The contractor was responsible for 34% of the training undertaken, while independent trainers were responsible for 24% of the training undertaken. Forest owner trainers had trained 21% of the workforce. In comparison the NZFOA census (Byers, 1995) reported that contractors were responsible for training 60% of the silviculture workforce (Figure 14).

Frequency of Trainer Visits

The silviculture workforce were asked how often they had seen a trainer in the previous 12 months, and how often they would like to see a trainer. Seventeen percent said they had not seen a trainer in the last 12 months, 10% said that they saw a trainer monthly, however 21% said that they would like to see a trainer monthly. A further 25% said that they would like to see a trainer either daily or weekly, 10% said that fortnightly was optimal for them. Twenty percent said that they would like to see a trainer "often" or "as needed".

As the average time spent by silvicultural crews on the East Coast was four years, it is of concern that trainers had not seen 17% of the workforce in the previous 12 months, the high turnover of these crews almost certainly contributed to this. Greater certification of contractors or increased investment by forest owners may improve the trainer/trainee ratios in the forest, and remedy this problem.

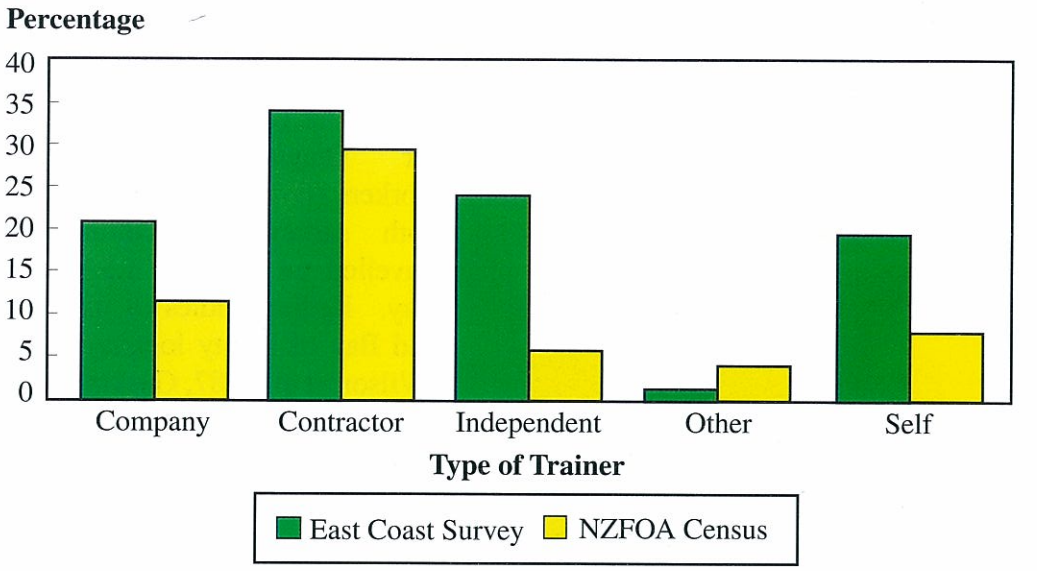

Figure 14 - Sources of training

Main Job in The Silviculture Crew

Silviculture workers were often expected to carry out a range of tasks during their days work, subject to changing weather patterns and company requirements. Thus a crew may spray released trees in the morning when the air is still, and change to planting once optimum spraying conditions had gone. Table 5 shows the distribution of jobs "today" and "usual job" distribution among those surveyed. The most common combination of main jobs was Prune/Plant/Spray (11%). On the day workers were surveyed, pruning was the most frequently encountered job, with 58% carrying out this operation. This is due in part to the time of year (October) the survey was administered. Spray releasing was the second most common job at 12%. Time of year has a strong influence on the type of job(s) undertaken by silvicultural workers.

Table 5 - Job distribution among silviculture workers

Operation	Main Job (%)	Job Today (%)
Supervise	12	4
Prune	37	58
Plant	2	0
Spray (Release)	0	12
Thin to Waste	3	7
Other	4	1
Combination	42	18
TOTAL	100.0	100.0

Figure 15 - Pruning was the most common task at the time of the survey.

Conditions of Employment

Hours of Work

On the East Coast, work days were an average of nine hours long. The most common workday was from 7 am to 4 pm. There was a difference in the times stated by contractors and crew to start and end work, possibly through confusion about when the actual workday "starts", whether at pick up or when the actual work task started.

The Otago/Southland workforce survey (Byers and Adams, 1995), reported that silviculture workers spent an average of nine hours at work. Their workday ranged from six to 12 hours.

Travel Time To Work

The average travel time on the East Coast, was consistent with travel times for Otago/Southland silviculture workers (Byers and Adams, 1995). In both surveys, silviculture workers travelled an average 1.3 hours each way. Earlier studies of the Northland and Bay of Plenty logging workforces (Wilson et al, 1987, Gaskin et al, 1987) revealed an average travel time of 1.4 hours. Long travel times may contribute to the high silvicultural turnover.

Method and Frequency of Pay.

Just under half of both crew and contractor groups were paid on a contract basis (Table 6). Informal discussions at the time of survey revealed that many of those who were being paid piece-rate considered that they were contract workers. In a previous survey (Gibson, 1994), found that payment by piece-rate was the most common method for silviculture workers (44%). In this East Coast study, 91% of those surveyed were paid fortnightly (Table 7), while in the Otago/Southland workforce survey (Byers and Adams, 1995), 59% of silviculture workers were paid fortnightly.

Table 6 - Method of payment

	Contractor (%)	**Crew (%)**
Hourly Wages	24	12
Contract	65	43
Subcontract	0	6
Piece Rate	11	39
TOTAL	100	100

Income

The average fortnightly take home pay for the contractor group fell within the $600 to $800 bracket, while for the workers, the average take-home pay was $400 to $600 per fortnight. As the national average fortnightly take home pay for males was $1,308 (Statistics New Zealand, 1996), silviculture workers were being paid well below the male national average. This may account for the high turnover rate within silviculture.

A large number of those surveyed were receiving a minimum wage in the $0 to $200 bracket. This could be related to the piece-rate payment system, where payment is performance related, so that those workers who were new to silviculture or new to the particular silvicultural task would have received lower incomes, than the more experienced workers. Additionally, the information provided could underestimate the true take-home pay of those workers who had automatic payments. Fortnightly take home pay ranged from $0 to $200 at the lower end, to more than $1800. It is also important to consider the time of year, the seasonal nature of silvicultural work means that the workers have varying levels of income throughout the year.

The survey found that the average take home pay for the group was $640. In the Otago/Southland workforce survey (Byers and Adams, 1995) the average fortnightly take home pay of silviculture workers was $712. More contractors (42%) were receiving payments in the higher ($800+) wage brackets, compared with only 19% of crew in the same brackets (Figure 14). There was no difference in take home pay by ethnicity.

Income and FIRS Modules

Twenty-two percent of the silvicultural workers said that they were paid more if they had FIRS modules, 78% thought it made no difference. Several of the contractors said that workers with FIRS modules were paid more.

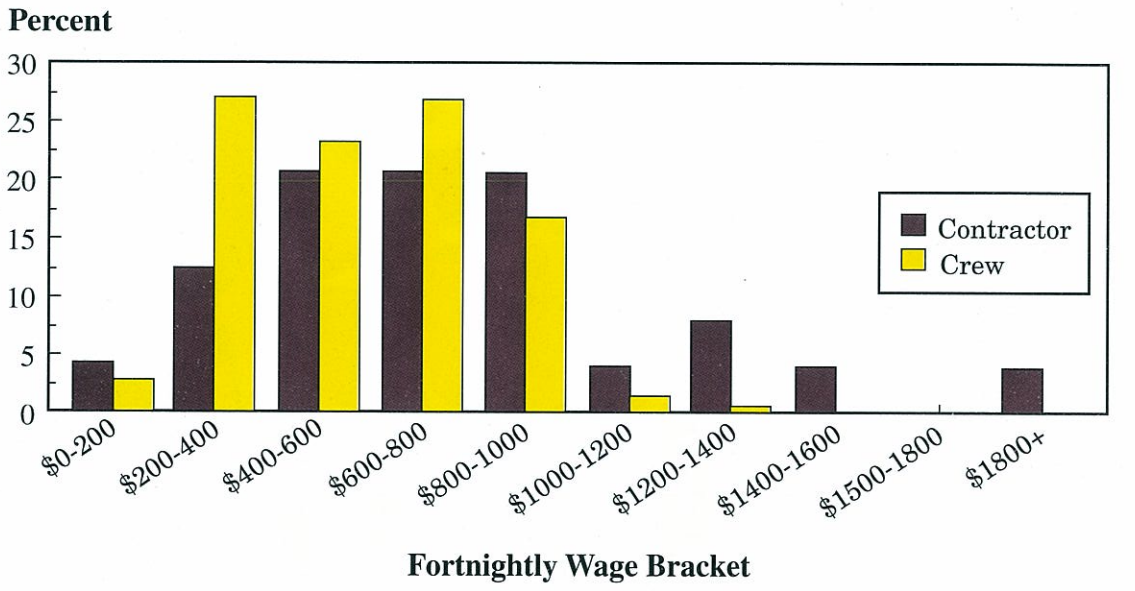

Figure 16 - Fortnightly Pay of Contractor and Crew

Health and Safety

Health and Safety in Employment Act (1992)

On April 1, 1992, the Health and Safety in Employment (HSE) Act was passed as legislation. This Act requires employers to implement systems to prevent harm occurring to employees and others at the place of work. If an employer can show documentation proving a safety system is in place, then it is less likely a prosecution would result if an employee was harmed while at work (Riddle and Kirk, 1995).

Part of this documentation is a safety management plan. A safety plan is a dynamic document which contains (among other things) details of standards, hazard identification and management, training, audit measures, and procedures, which document the steps an employer has taken to reduce harm in the workplace.

Does the Crew Have A Safety Plan?

Eighty-three percent of those surveyed said that "yes" their crew had a Health and Safety Plan. However 17% said either no, or that they didn't know. As a number of the survey participants had only just started work, it is of concern that there was no formal induction procedure, where HSE requirements could be explained.

Frequency of Safety Meetings

A further requirement of the Act is for contractors to hold regular meetings with their crew to discuss new and potential hazards. This allows the health and safety of workers to be continually monitored and improved. Sixty-nine percent of workers said that their crew had regular Health and Safety meetings. Twenty-five percent of these meetings were on a monthly basis, 23% were weekly.

Figure 17 - An East Coast silviculture Crew

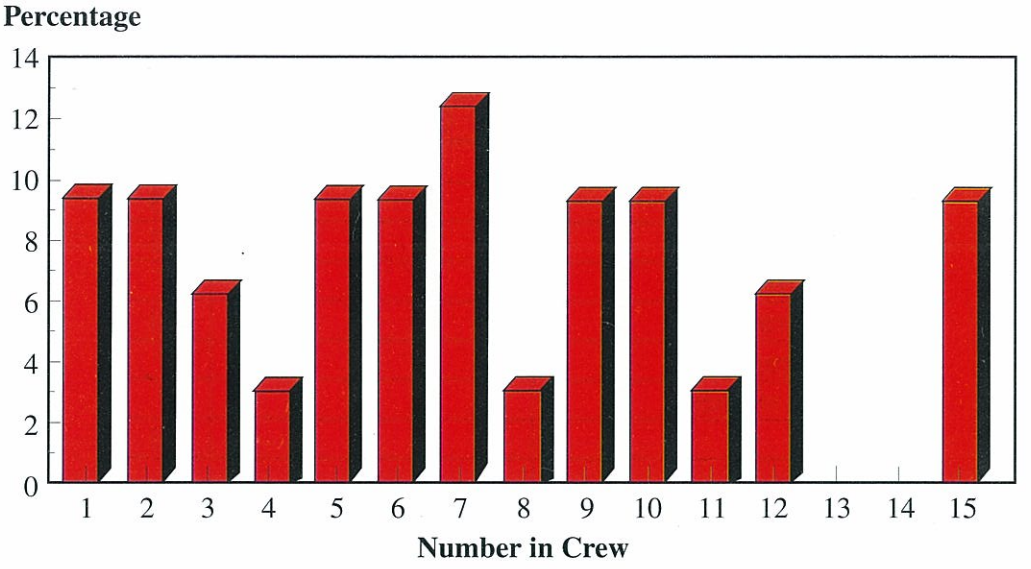

Figure 18 - Distribution of crew size for East Coast silvicultural workforce

Contractor Questions
An additional set of questions were completed by the contractor.

Crew Characteristics
Twenty-five of the 32 surveyed crews were employed under contract. There was an average of seven crew members, including the prime contractor, in each silvicultural crew. Figure 16 shows the distribution of crew size for this workforce.

Absenteeism and Turnover
Silviculture traditionally has a high turnover rate, and although turnover in logging crews has been studied, there have not been any studies undertaken to determine reasons for turnover in silviculture. In this survey, the average number of people who had left the crew in the last month was two (range one to six).

The contractor was also asked how many people had been absent from work in the last month, and for how long. On average three workers had been absent, with lost time ranging from one to six days in the month previous to survey.

Work Breaks
Forestry and logging work is physically demanding (Gibson, 1994). Therefore it is important that workers have sufficient workbreaks during the day so they do not become fatigued. Fatigue has the effect of reducing performance, lowering productivity and increasing unsafe behaviour, as workers take shortcuts which require less physical effort (Kirk, 1996). Fatigue awareness may reduce the incidence of injury occurring to workers.

The contractor was asked how many breaks the crew took during the day, and the duration of these breaks. The average number of rest breaks taken was two, with a range of one (one hour) to eight (five minute) breaks over a day. The most common break for these silvicultural crews was two 30 minute breaks during the day (54%), 21% of crews took one 60 minute break, and 14% took three 15 minute breaks. Five minute breaks as needed was one crew's answer to fatigue.

Supply of Operational Equipment
The contractors were asked to identify the equipment they supplied to their

Table 7 - "What equipment do you supply your workers?"

Item	Contractors	%
Fencing gear	1	7
Fuel and oil	2	13
Ladders	2	13
Ladders/parts	1	7
Spare parts	2	13
Safety gear	1	7
Saw and slasher	1	7
Tools	2	13
Training	1	6
Everything Except Pruners	1	7
Vehicle	1	7
TOTAL	15	100

workers. Two-thirds said they supplied "all" equipment necessary for the job, including safety and operational equipment. There was a range of other equipment supplied (Table 7).

Method of Transportation

Half of all crews used a 4-wheel drive (4WD) utility for transportation, with the Toyota Hilux being the most popular model at 27%. A 4WD or 2WD van was used by 29% of crews.

Safety Audits

The contractor was asked a further question about safety audit procedures (a requirement of the HSE Act (1992)). Sixty-nine percent said they carried out audits, the details of these audits were recorded in a number of ways, from a notebook/diary to company audit forms.

General Comments

Contractors were provided with the opportunity to comment. Only three of the 36 contractors surveyed, responded, one simply stated that workers were responsible for their own safety checks. Other comments were that in order to make money one needed to work hard, and that this excluded a number of those formally trained because they were generally "too slow". Another contractor felt there had been an improvement in silviculture over the past four years, but that there was still "more improvement needed", including training about quality issues.

While completing the survey forms many workers and contractors commented on issues that they felt were important. One of the most common statements made was their need for recognition of the importance of their job. The isolation of the East Coast and lack of other employment opportunities compounded these issues.

Figure 19 - The East Coast - A growing forestry region

CONCLUSIONS

- The objective of the ECFP in creating employment in the region appears to have been successful, with a larger percentage of locals than non-locals being employed. It was particularly encouraging to find that 113 (58%) of those employed were local Maori.

- Silviculture on the East Coast continues to follow the national trend of a high turnover rate, with few wishing to remain in the workforce longer than five years. Considerable work needs to be implemented to improve the status of the silviculture workforce (along with other issues such as pay, travel time, and accessibility of training) to improve the turnover situation.

- Average fortnightly take home pay rates of $400 to $800 were identified as being extremely low in comparison with the New Zealand national average take home pay of $1,308, due in part to the seasonal nature of silvicultural work.

- The Health and Safety in Employment Act (1992) appears to have had an impact, with 83% stating they had a safety management plan. Three-quarters of all contractors stated that they carried out regular safety audits on their crews equipment.

- A quarter of all workers began in silviculture because it was the only job available to them, this was compounded by the relative isolation of the East Coast, and lack of other employment opportunities.

REFERENCES

Byers, J. (1994) : "Career Aspirations and Industry Perceptions of Polytechnic Forestry Students- A Pilot Study". LIRO Report Vol. 19, No. 12, 1994.

Byers, J. (1995) : "New Zealand Forest Owners Association Forestry Workforce Census 1994". LIRO Project Report 57.

Byers, J. and D. Adams (1995) : "Otago/Southland Forestry Workforce 1993-Five Years Later". LIRO Project Report 58.

Evans, W. (1984) : *In* NZ LIRA seminar proceedings "Human Resources in Logging".

Gaskin, J., Smith, B. and P. Wilson, (1987) : "1986/7 Logging Workforce Survey". LIRO Report Vol. 12, No. 2, 1987.

Gibson, R. (1994) : "Attitudes Toward Safety in The New Zealand Forest Industry 1994". LIRO Project Report 53.

Kelly, J., and B. Marshall (1996): "Atlas of New Zealand Boundaries". Auckland University Press.

Kirk, P. (1996) : "Reducing the Impact of Fatigue on Forest Workers". LIRO Report Vol. 21, No. 3, 1996.

Riddle A. and P. Kirk (1995) : "Health and Safety Issues in Forestry". *In* 1995 Forestry Handbook. New Zealand Institute of Forestry (Inc) Publication.

Statistics New Zealand (1996) : "Labour Market Statistics 1995".

Wilson, P., Smith, B. and J. Gaskin, (1987) : "The Logging Workforce in Northland". LIRO Report Vol. 12, No. 12, 1987.

Appendix One

East Coast Silviculture Workforce Survey

This survey should take about 10 minutes.
If you don't want to answer a question, leave that question.
All this information is confidential
If you have any questions, please ask!

1. Age: _____ 2. Male Female

3. NZ European NZ Maori Tribe _____ Other _____

4. Marital Status Single Married De Facto

5. Number of dependents: Total _____ Children: _____ Others: _____

6. Where do you live? Rural Small Town City

7. What is the name of the place where you live? _____

8. Have you always lived in this region? yes no

9. If no, where were you living before the East Coast?
_____

10. How long have you lived in the East Coast?
_____

EDUCATION

11. Length of time at secondary school: 1 year 1 - 3 years more than 3 years

12. School Qualifications: None School. C. U. E./ Sixth Form Cert. HSC/Bursary

13. Post school education: Technical training University None
other:_____

RECRUITMENT

Circle One Answer

14. What was the one main reason for you starting work in forestry?
pay outdoor environment only job available other _____

15. How did you get this job?
answered an advertisement told by relative told by friend
other _____

16. What was your first job after leaving school? _____

17. Was your father or mother employed in:
forestry father mother both
logging father mother both
Other: Father _____ Mother _____

TURNOVER

18. How long have you worked in silviculture _____?

19. How long have you worked in silviculture on the East Coast?
_____

20. How long have you worked in this crew? _____

21. How many other silviculture crews have you worked for? _____

22. Do you think you will still be in silviculture in five years time?
yes no

23. What job would you like to be doing in five years time?
_____

24. Did the East Coast Forestry Project influence you starting/working in silviculture in the East Coast?
yes no

25. If yes, when did you start silviculture on the East Coast? _____

ACCIDENT RECORD

26. Have you ever had an accident while working in silviculture during the last five years? **yes no**

27. how many days off did you have _____

TRAINING

28. Have you had any formal training in silviculture? **Yes No**

29. What was it? _____

30. Were you satisfied with the training you got.

|_____|_____|_____|_____|_____|_____|
No, very unsatisfied — okay — Yes very satisfied

31. Do you know what Forest Industry Record of Skills (FIRS) modules are? **yes** **no**

32. Do you have any FIRS modules? **yes** **no**

33. Which FIRS modules do you have? *(tick "hold" box)*

34. Which FIRS modules are you being trained in? *(tick "train" box)*

Module		**Hold**	**Train**
General Requirements	1.1		
Chainsaw Maintenance and Operation	1.6		
Forestry Knowledge	1.2		
Tree Selection	1.3		
Plotting for Forest Operations	1.4		
Forest Mensuration	1.5		
Tree Felling Stage One	1.7		
Wire Rope and Accessories	1.8		
Advanced First Aid	1.10		
Fire Control: Stage 1	1.12		
Planting Site Preparation	2.1		
Forest Planting	2.2		
Tree Releasing	2.3		
Silvicultural Pruning	2.4		
Thin To Waste (Small Trees)	2.5		
Handling Chemicals	2.6		
Thin to Waste (Large Trees)	2.7		
Tree Processing On the Landing	3.1		
Log Making	3.2		
Tree Felling: Stage Two	3.3		
Tree Felling: Machine Assisted	3.4		
Breaking Out: Ground Based Extraction	3.5		
Breaking Out: Cable Hauler Extraction	3.6		
Machine Operating: Ground Based Extraction	3.7		
Machine Operating: Cable Hauler Extraction	3.8		
Machine Operating: Loader	3.9		
Machine Operating: Mechanical Processors	3.10		
Hauler Systems	3.11		
Salvaging Windthrown Trees	3.12		

35. Who is training you at the moment for these modules? Contractor Self Forest owner trainer Independent Trainer Other _____

36. How often have you seen a Trainer in the last 12 months? _____

37. How often would you like to see a trainer? _____

38. Do you find it difficult to contact an assessor _____

39. What is the one main job you usually do in your crew *(tick main job box)*

40. What job are you doing right now (today) *(tick job today box)*

		main job	job today
1	Supervise		
2	Prune		
3	Plant		
4	Spray		
5	Thin to Waste		
6	Site Prep		
	Combination (which numbers)		
	Other		

PAY

41. How are you paid hourly wages? contract? subcontract? piece rate?

42. How often do you get paid? weekly fortnightly monthly other

43. How much did you earn in your last normal pay period? (Take home pay)

$0 - $200 $200 - $400 $400 - $600 $600-800 $800 -1000

$1000-$1200 $1200-1400 $1400-1600 $1600 - 1800 $1800+

44. Do you get paid more if you've got FIRS modules? **yes** **no**

45. How long does it take you to get to work each day (one way) ?____

46. What time do you start work _____ finish work _____ each day?

47. Does your crew have a Health and Safety Plan? **yes** **no**

48. Does your crew have regular safety meetings? **yes** **no**

49. How often are these meetings held? _____

Thankyou.

CONTRACTOR QUESTIONS

1. Is the crew: Company Contract Independent

2. Number of full time employees in the crew (including yourself)_____

3. Do you work: Full time Part Time Seasonal Casual
   Other _____

PERSONNEL

4. How many people have permanently left this crew in the last month? _____

5. How many have been absent in the last month? for how long? _____
6. Of the full-time workers in your crew, how many regularly turn up for work every day? _____

7. What equipment do you supply to your workers?
   _____

8. How many breaks does your crew have during the day? _____

9. How long are these breaks _____

10. What type of crew transport is used? _____

11. How often do you complete a safety audit on your workers equipment?
    _____

12. Are the results from this audit recorded? _____

13. How are these results recorded? _____

14. Any other comments? _____
_____
_____
_____

Thankyou