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LOGGERS' RANKING OF FELLING AND TRIMMING HAZARDS

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ABSTRACT

Loggers, logging contractors, forest management and secondary school students were assessed on their knowledge of hazardous felling and trimming situations. They were required to indicate how dangerous they considered nine felling and nine trimming situations. The results of this assessment were compared with actual accident data from the LIRA Accident Reporting Scheme.

Results showed all groups recognised the felling situations which were the common cause of fatalities and lost time accidents. Trimming hazards were more difficult to recognise. Logging industry workers seriously under- rated the risk of injury due to walking on a log while trimming.

INTRODUCTION

This Report is a summary of the second part of the project to reduce felling and trimming accidents. The first part of this project was to assess whether loggers were aware of which parts of a logging operation were hazardous and what types of injuries and parts of the body were most at risk (Tapp et al., 1990). The final part of this project is to conduct on-site risk analysis of the felling and trimming sub-operations.

The current study was undertaken to assess the accuracy with which loggers judge hazards in their work environment. The study required loggers to rank the risk of injury when undertaking eighteen specific felling and trimming situations. The hazard ranking loggers gave to the felling and trimming situations was compared with the frequency and severity of similar accidents reported in the LIRA Accident Reporting Scheme (ARS). If loggers had an accurate impression of the risks involved in each situation the rankings of the situations would be similar to their ranking in the ARS. The voluntary ARS was introduced in 1983 (Prebble, 1984) and is estimated to cover 80% to 90% of all logging accidents that occur. Quarterly and annual reports summarise trends in the accident data for the year and show felling and trimming account for 57% of all lost time accidents (Gaskin, 1990). Poor technique was implicated in 40% of all trimming accidents (Gaskin, 1989). An analysis of fatal accidents from 1968 to 1987 reveals felling accidents accounted for over 60% of all fatal logging accidents (Gaskin, 1988).

The hazard ranking questionnaire was also answered by secondary school students representing a group with no industry experience or training. The ranking of felling hazards by New Zealand loggers was also compared with Swedish loggers ranking the same or similar hazards (Ostberg, 1980).

Items of biographical information such as age, experience, type of operation, level of logger certification and accident history were collected to assess whether these variables had any effect on the ability of the logger to judge risk.

ACKNOWLEDGEMENTS

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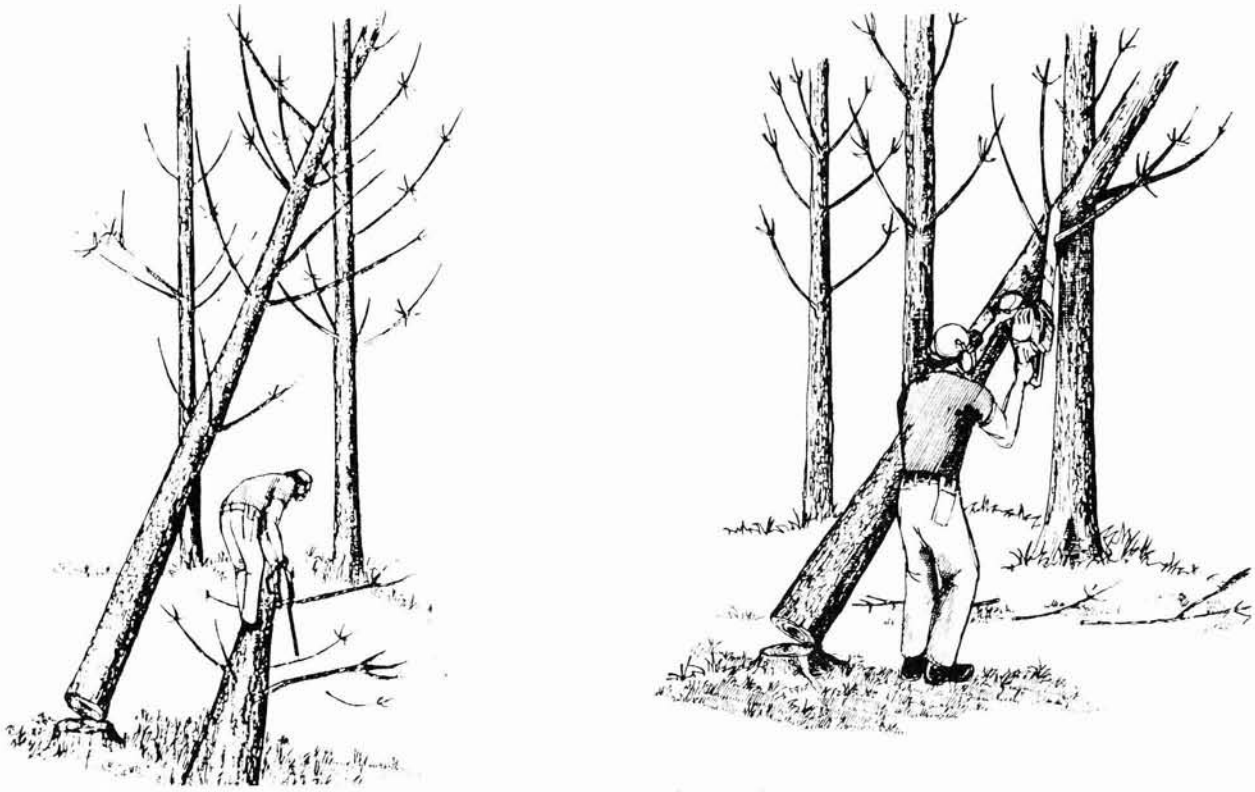
STUDY METHOD

A group of 137 logers and 46 logging contractors who formed part of the LIRA Absenteeism and Turnover study (Tapp & Gaskin, 1990) were used for this hazard ranking study. Additionally, the questionnaire was applied to supervisors (37), trainers (8) and bush inspectors (6). As a control group, 100 secondary school pupils (male and female, 16 to18 years old) from Canterbury also completed the questionnaire. This group had no forestry/ logging affiliation.

Ostberg (1980) developed a series of nine pictures depicting hazardous felling situations. These were modified to better represent New Zealand conditions. Loggers were shown a booklet consisting of combinations of pairs of pictures with captions describing each situation (Figure 1). They were asked which picture of the pair was portraying the more hazardous situation. This was repeated until all nine pictures had been compared with each other. Instead of confronting each person with 36 pairs of felling pictures, each person saw only nine of the 36 possible pairs of pictures. Over the whole study, all pairs of pictures were compared by using four different sets of picture combinations.

Due to the high number of trimming accidents, a set of nine trimming pictures was developed and presented to each person in the same way.

The relative risk of each situation was determined by measuring the proportion of people who rated one situation more hazardous than another.



Trimming under a hangup.

Using the saw above shoulder height to trim.

Figure 1 - An example of one pair of pictures depicting hazardous trimming situations used in the survey

The situations used in the survey were :

Felling :

1 *Felling without clearing around the butt.*

2 *Felling into standing trees*

3 *Felling the supporting tree in a hang-up*

4 *Driving a tree at right angles across a hang-up*

5 *Felling within two tree lengths of another person*

6 *Felling against the wind or lean*

7 *Leaving a hang-up and going to smoko or knockoff*

8 *Trying to bring down a tree by rocking it*

9 *Over-cutting the backcut*

Trimming :

1 *Walking along the top of log to trim*

2 *Trimming on the downhill side on steep country*

3 *Over-reaching to trim*

4 *Using a saw behind the legs*

5 *Using the saw above shoulder height*

6 *Standing on a tree under tension to head off*

7 *Trimming a tree which is well off the ground*

8 *Trimming in front of a scarfed and back-cut tree*

9 *Trimming under a hang-up*

RESULTS AND DISCUSSION

Felling

Table 1 shows age, experience and accident record of fallers and logging contractors used in this study.

Table 1 - Comparison of logging occupation groups used in the survey

	Total	Faller	Contractor
Average Age (years)	32.1	29.9	39.1
Average Years Logging	10.9	8.3	18.4
Percent Had Accident	47.7 %	46.6 %	51.2 %

Figure 2 indicates very little difference between "logging management" and the faller/contractor group in risk rating.

Secondary school students had remarkably similar results to the industry group. These results indicate people who have never worked in the logging industry recognise the same felling situations as dangerous as those who currently work in the industry. Ranking of hazards was not influenced by geographical area, type of operation, training, age, experience or accident history. No difference was observed between the New Zealand group and the Swedish group.

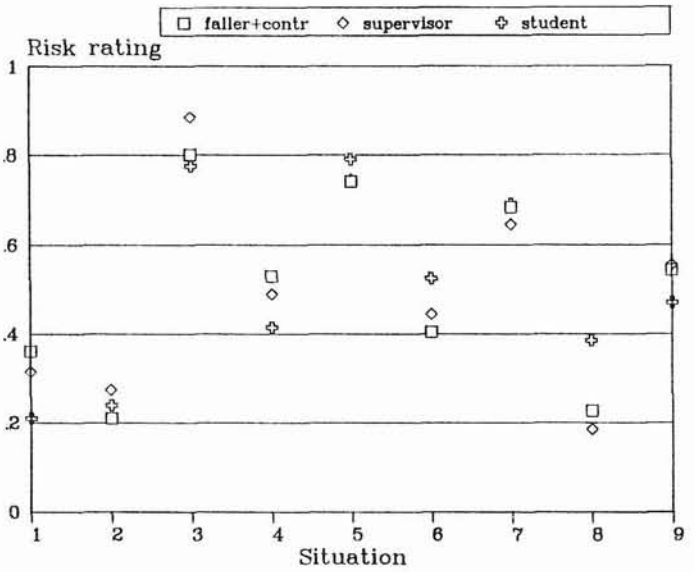


Figure 2 - Risk ratings of occupation groups for felling situations

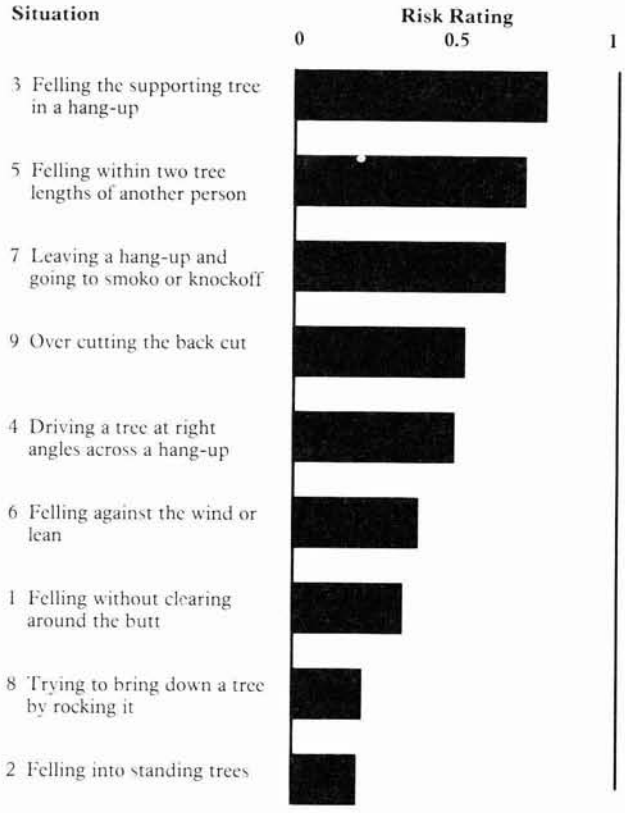


Figure 3 - Felling situations ranked in order of risk rating

Comparison of these rankings with 20 years of fatal logging accidents (1968 - 1987) (Gaskin, 1988) indicate loggers and students recognise hang-ups as a serious hazard (Figure 3). Hang-ups were the greatest cause of death (16/49) in the period 1968-1987. From the ARS, hang-ups accounted for only 7.6% of lost time felling accidents but 31% of fatalities.

Trimming

Trimming risk ratings between forest industry occupation groups were very similar but differed from secondary school students for situations 1, 7 and 8 (Figure 4) indicating experience and/or training is necessary to identify some trimming hazards. Industry workers considered working in front of scarfed and back-cut trees and hang-ups the most dangerous. This is consistent with the fatality results which show most fatalities can be attributed to these causes. The risk of injury by slipping off a log while trimming was rated low by industry workers (Figure 5) but caused a disturbingly high number of lost time accidents (10.5%). Although students did not recognise the danger of trimming in front of a scarfed and back-cut tree, they did rank "walking along the top of the log to trim" and "trimming a tree which is well off the ground" significantly more hazardous than industry groups.

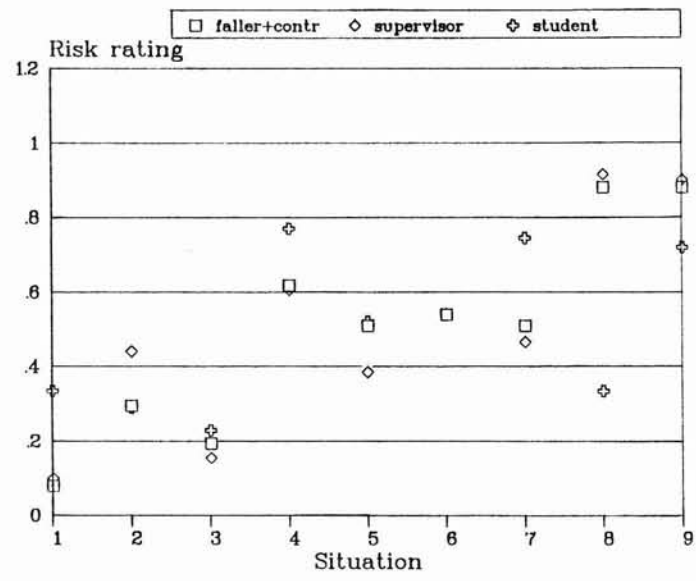


Figure 4 - Risk rating of occupation groups for trimming situations

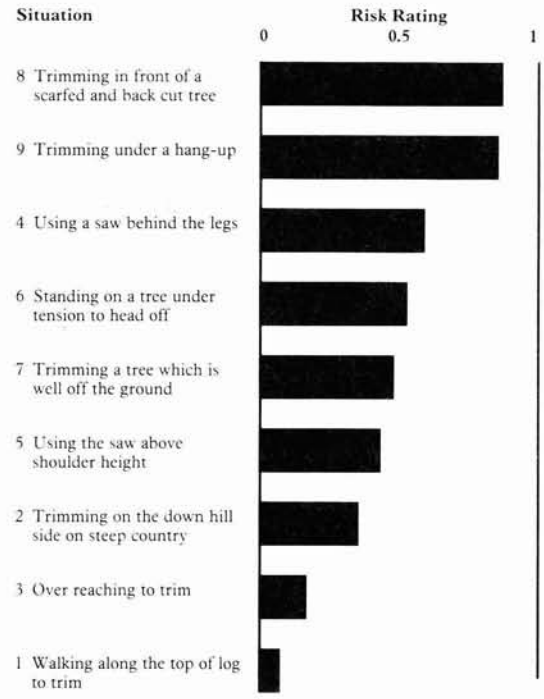


Figure 5 - Trimming situations ranked in order of risk rating

CONCLUSION

There was little difference in the ranking of hazardous felling situations presented to people participating in this study. Both forest industry workers and school pupils recognise dangerous situations in felling which were the common causes of fatalities and lost time accidents.

In the trimming series of pictures the danger of scarfed and back-cut trees and hang-ups was recognised but the hazard involved in walking on a log while trimming was not recognised by the industry group. Perhaps because "falling off a log" has not caused any fatalities it does not catch industry's attention. Until recently, trimming accidents have not been reported in terms of the specific activity which contributed to the accident (Gaskin, 1989).

The data collected from the hazard ranking survey have been invaluable to identify what situations workers consider hazardous and what potential hazards workers need to be made more aware of, e.g. falling off the log while trimming.

Why do loggers place themselves in positions of high risk even when they are apparently aware of the dangers? The next stage of this study will investigate the amount of time a logger uses a risky practice or places himself in a risky situation and the factors leading to these events.

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