

# The economic and social implications of flying-fox predation on the north coast of NSW

**John Rogers**

Secretary, North Coast Horticulture

Chairman, Horticultural Section, NSW Farmers' Association

433 Humpty Back Road, McLeans Ridges NSW 2480

## ABSTRACT

Flying-fox predation has been a problem to horticulturists on the North Coast of New South Wales since the industry was established. Predation is especially severe in spring/early summer when most fruit crops are ripening. Flying-fox predation has inflicted considerable losses on fruit production. Predation has intensified since 1998 to the point that it is a perennial and expanding threat to industry viability. North Coast Horticulture offers five suggestions for consideration 1) there is an urgent and overdue need to bring those with expertise on the flying-fox issue into a consultative committee to address management problems; 2) incentives are required to encourage/assist growers to net their orchards; 3) governments must make a serious commitment to an integrated and properly-funded research effort; 4) shooting under licence should continue until effective non-lethal alternatives are available; 5) in the event that shooting is banned, we propose that farmers with vulnerable fruit crops should be eligible for compensation from the State for losses due to predation by flying-foxes. If public policy is to be changed to benefit the whole community, the community through the State budget should share the cost.

## Purpose

This paper presents the view of North Coast Horticulture, a council representing 13 horticultural industries on the North Coast of NSW. Its purpose is to describe the impact and consequences of flying-fox predation on the region's fruit industry and to propose some considered suggestions for management of the problem.

## Background

According to Australian Bureau of Statistics figures and industry estimates, the value of fruit production on the North Coast of NSW is over \$120 million per annum. Approximately 60% of this production is derived from fruit crops vulnerable to some level of flying-fox predation. It is a considerable local industry and much of its income is returned to the local economy. The industry is a major employer of labour in the area.

Despite its macro-economic significance, the fruit industry has not provided growers with

returns commensurate with their labour, risk and capital investment. Since 1993, prices have remained static and production costs have increased beyond the rate of inflation. The return on investment in the fruit industry, based on a sample of established enterprises, is less than 2% a year (source: survey of selected enterprises, North Coast Horticulture, 2000).

Flying-fox predation has been a problem on the North Coast for as long as it has had a horticulture industry (Slack 1990). While predation occurs throughout the year, it is especially severe in spring/early summer when flying-foxes are breeding and much of the fruit is ripening.

However, until 1998, the majority of fruit orchards managed to cope with predation without netting. According to those farming in the decade prior to 1998, only stonefruit, lychees and persimmons were consistently and significantly attacked and their losses varied depending on farm location.

Even in years of heavy predation, the farmers estimated that their losses rarely exceeded 30% on any one property and there were sufficient years of light predation to allow recovery.

It is said – and the evidence for this is purely anecdotal – that a factor in this was the ability of farmers experiencing predation to shoot flying-foxes under licence issued by the NPWS. Certainly many experienced orchardists consider that strategic shooting of a relatively small number of flying-foxes was successful in reducing their losses, especially when predation was reasonably light.

## 1998 and beyond

In 1998 there was a dramatic increase in the level of flying-fox predation to North Coast fruit industries. Unnetted stonefruit, persimmon and lychee orchards were devastated by flying-fox incursions.

A survey of the local stonefruit industry conducted by the North Coast Low-Chill Stonefruit Growers' Association after the 1998 harvest revealed losses of from 50% to 100% in the 60% or so of orchards without netting. On the basis of NSW Agriculture production figures, this was estimated to have cost the industry (and local economy) between \$4 and \$6 million in the season (or around \$45,000 per grower). This estimate didn't take into account the pre-harvest costs (for labour, fertiliser, chemicals, fuel and the like) that on most North Coast stonefruit orchards exceed \$20,000, or losses from downgrading the quality of marketed fruit.

The 1998 experience, and the provision of low-interest loans by the NSW Government (obtained after representations by North Coast Horticulture), led to a high uptake of netting in those industries that had been the hardest hit.

In the 1999 and 2000 seasons the predation of stonefruit, persimmon and lychee orchards continued unabated with near-total crop losses common in both years. In the same years, presumably because of both a paucity of native food and more orchards being netted, markedly heavier predation was reported in the banana, coffee, mandarin and mango industries. Most had suffered predation before but on a minor scale.

The banana industry advised the NPWS in 2000 that their growers were losing 30% of their crop to flying-foxes (Lines-Kelly 2000). The industry now estimates that its losses are closer to 50%

(100% with some varieties) with predation persisting throughout the year (pers. comm. M. Lines-Kelly, 2001, Banana Industry Committee).

It is not possible to quantify the value of this loss with any precision but in 1996/97 the North Coast banana industry crop was valued at \$20.5 million (Baker *et al.* 1999). In 1998/99 the industry estimated its production value to be \$59 million (Banana Industry Committee, Annual Report, 1998/99). Clearly, the direct economic impact from losses to this one industry alone is very substantial.

Estimated losses to other industries are also high. The mandarin industry on the North Coast says that it loses at least 40% of its annual crop to flying-fox predation (pers. comm. R. Hick, 2001, North Coast Citrus Growers' Association) while other industries say their losses are significant and increasing (minutes, North Coast Horticulture meeting, 2001). While no accurate estimate of these additional losses is available, industries suggest they amount to at least another two million dollars. Last season, the largest lychee grower in the area reported that in the unnetted section of her orchard, she lost some 200 tonnes to flying-fox predation, valued in excess of \$500,000 (pers. comm. R. Amos, 2001, Lychee Growers' Association).

As a consequence of the intense predation since 1998, many farmers that are unable to afford netting have been, or are now being, forced out of their industries. For example, in the stonefruit industry, the number of growers went from 240 in 1997 to 120 in 2000; and the industry continues to contract (North Coast Low-Chill Stonefruit Growers' Association, 2001). The North Coast mandarin industry, which has 200 growers, is not expected to survive (pers. comm. R. Hick, 2001, North Coast Citrus Growers' Association). The number of banana growers who have been or will be forced out of the industry is not known, but the relevant industry body estimates that around 200-240 growers are at risk if the level of predation continues (pers. comm. M. Lines Kelly, 2001, Banana Industry Committee).

Several observations must be made about the implications of such industry contraction:

- in the majority of cases, those leaving their industries have been fruit farmers for many years, certainly since the mid 1980s;
- only a relatively small proportion have the means to re-plant, and to survive the period of years until a new crop comes into production;

- most producers are middle-aged or older and have scant chance of finding off-farm employment in an area of high unemployment;
- the local economy loses also. Fewer people are employed and there is less business for local firms, many of which are already struggling; and
- fruit-growing properties are proving very difficult to sell. Their attractiveness has been reduced because of their poor commercial performance over the past three years and the inability – due to planning restrictions – to use them for non-agricultural purposes.

The conclusion is unavoidable that flying-fox predation has inflicted considerable losses on fruit production on the North Coast; that predation has intensified since 1998 to the point that it is a perennial and expanding threat to industry viability; and that it endangers the survival of some industries.

### Netting: The issues

For over a decade a number of industries have tried to find an alternative to netting. The lychee industry offered a \$10,000 reward to any person who could do so – none did. Members of the stonefruit industry have tested any number of sound and sound/light devices over the years only to see the animals ignore them after initial hesitation.

Until alternate means of deterrence are developed, netting will continue to offer the only completely effective means of preventing predation of vulnerable fruit crops. However:

- the capital costs of netting are high. Professionally installed netting is at least \$20,000 a hectare on reasonably flat land. Costs are not confined to installation costs. Nets have to be replaced every 10 to 12 years and require expensive annual maintenance. Replacement and maintenance costs can rise dramatically when netting is damaged by hail. In May 2001, hail damaged netting on a number of properties;
- the cost of netting has to be seen in the context of generally low industry profitability. This makes it very hard for farmers without capital reserves or off-farm income to afford the \$60,000-\$80,000 required to net the average North Coast orchard;
- local lending institutions are reluctant to advance money for netting as it is deemed to be a temporary structure;
- in some locations and crop types, damage from flying-foxes can be intermittent or light and therefore doesn't justify the high cost of netting;
- netting doesn't guarantee viability; indeed it may endanger it. The investment in netting – either taken from capital or borrowed – increases commercial vulnerability as it denies a financial safety net to cope with bad seasons or other exceptional costs; and
- several other considerations prevent netting. For example, many of the steep slopes on which banana plantations are located are impossible to net, and there is growing community opposition to netting because it affects visual amenity.

### Prospective impacts

If they are to survive in the long-term, more commercial fruit industries on the North Coast will need to net as flying-foxes discover and adapt to new orchard food sources. Growers for whom netting is not a viable option will be forced out of farming. These people might have otherwise managed to stay viable. The future for these people – and their families – in an area of high unemployment is not promising.

Our local economy must be damaged by a contraction in the fruit industry. Local agricultural supply and service providers will have millions of dollars taken from their sales. There is no relief in sight if the current level of predation persists.

Also, orchardists who net will be less capable of surviving bad seasons or other commercial setbacks because of debt or reduced capital. Meeting the capital cost of netting adds to the precariousness of farming.

There will be less innovation in crop selection and less scope to exploit emerging market (particularly export) opportunities. The development of North Coast horticulture has come from its ability to attract investment in 'sunrise' industries which are unproven in the market place. One example in our region is coffee, which has considerable potential but whose returns don't allow netting at this stage in its development. Prior to 1998 a wide range of crops could be grown and 'tested' in the market place without major capital cost – now this will occur only with crops unappealing to flying-foxes or whose returns give some prospect of returning the cost of netting.

Accordingly we shall see a consolidation around industries with established markets - many of which are suffering from over-production - and the avoidance of crops that may in the long-term offer considerable economic benefit to the region.

This represents a loss of agricultural diversity and an unhealthy reliance on a few industries, the failure of any one of which would have a severe impact on the local economy and community.

As mentioned earlier, a large number of fruit properties are no longer being farmed. This is either because no alternative crop has been identified, an alternative crop cannot be afforded, or the properties are in the process of being sold. Disused fruit crops have environmental implications, as land not maintained will quickly succumb to noxious weeds, erosion and the spread of pests and diseases in neglected fruit trees. In turn, this endangers neighbouring properties, waterways and the visual amenity of the region.

## Proposals

It is a barren argument that presents only the problem. Therefore, North Coast Horticulture offers five proposals for consideration.

### 1. Combine Expertise

There is an urgent and overdue need to bring those with expertise on flying-fox issues into a consultative committee to address together such matters as:

- 1) research requirements and sources;
- 2) the social and economic costs of predation;
- 3) strategies to reduce predation by, for example, improving native food sources and encouraging netting;
- 4) processes for reversing habitat loss;
- 5) non-lethal means of deterrence; and
- 6) most important, the funding the above requires.

Clearly the State Government would have to fund such a body, and NSW Agriculture and the NPWS would be key players. But the scientific, farming and environmental communities must be represented as well.

### 2. Encourage netting

This is a clear policy priority. Netting offers the most effective means of preventing predation, but it is expensive and denies capital for other uses. Incentives are required to encourage/assist growers to net their orchards. We propose:

- 1) the continuation of low-interest loans under the FarmBiz program but with the loan ceiling and asset test increased and the application procedure streamlined;
- 2) the provision of cash grants as a percentage (say 20%) of the total cost of netting to help farmers accommodate the capital outlay; and
- 3) a change in the taxation system to allow accelerated depreciation of the cost of netting.

### 3. Improve Research

As proposed above, it is time governments made a serious commitment to research. There is too much reliance on fragmented, individual efforts which seem to do little more than identify questions. We have enough questions and assertions, we now need answers from an integrated and properly-funded research effort.

### 4. Continue shooting under licence

This is not a felicitous option given its limitations and the distress it causes in the community (including to many farmers), but

- 1) it is the only means of protecting vulnerable crops where netting is not a practical or commercial option;
- 2) it can be effective where predation is light or intermittent.

Further, legal (controlled) culling discourages illegal shooting which is always a risk when crops and livelihoods are being destroyed. Desperate people are always prone to desperate acts and banning shooting may prove to be counter-productive.

Therefore, it is proposed that shooting under licence continues until either an alternate effective non-lethal means of deterrence is available or other management strategies reduce the level of predation. We recognise that the listing of the Grey-headed Flying-fox as vulnerable may require a review of the NPWS licensing process and North Coast industries are prepared to co-operate with the NPWS in developing and implementing a workable arrangement.

### 6. Compensation

The situation has passed whereby it is fair or reasonable to ask farmers to carry the cost of environmental protection decisions. Accordingly, in the event that shooting flying-foxes is banned, we propose that farmers with vulnerable fruit crops should be eligible for compensation from the State for losses due to flying-fox predation.

In this regard it should be noted that a ban on shooting couldn't have been predicted by farmers when they made the investment decision to plant their crops. A ban on shooting would deny them a means of protecting their commerce that has

been made available, and facilitated by the State for over a century. If public policy is to be changed to benefit the whole community, the community through the State budget should share the cost.

---

## References

**Baker, J., Biggs, T., Peasley, D.** 1999. *Making a Difference Naturally: Strategies and Recommendations for a Sustainable Horticultural Industry in the Northern Rivers Region of NSW.*

**Lines-Kelly, M.** 2000. Letter to the Director-

General, NSW National Parks and Wildlife Service, from Banana Industry Committee.

**Slack, J. (ed).** 1990. *Flying-fox Workshop Proceedings, Wollongbar Agricultural Institute.* NSW Agriculture and Fisheries. Wollongbar, NSW.

---

## QUESTIONS & ANSWERS

**CHRIS DICKMAN:** Thank you, John.

**LEN MARTIN** (University of Queensland): One interesting point about your observations that the level of flying-fox predation is going up on the north coast is that it may not be due to the Grey-headed Flying-fox but to the Black Flying-fox. We've seen a huge incursion of Black Flying-foxes into northern New South Wales over the past few decades, and they tend to be less of a blossom feeder and more of a fruit feeder. I suspect that increased predation is in fact not Grey-headed Flying-foxes but Black Flying-foxes. But you've still got a flying-fox problem.

**JOHN ROGERS:** That's right. We have.