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Identifying Best Management Practices for Riparian Habitats in Gippsland Dairy Regions: Riparian Condition and Relationships with Farm Management.

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EXECUTIVE SUMMARY

1. This report presents the findings of a field project undertaken in the west and south Gippsland region of Victoria between May and December 2002. The specific aims of this project were: (1) to determine the current condition of riparian (streamside) habitats across the west and south Gippsland dairy region, (2) to investigate the relationships between landholder management practices and riparian condition, and (3) to make recommendations for management practices that could be investigated at demonstration sites planned for the region.

2. We surveyed 107 riparian sites and conducted 28 landholder interviews to gain information on the variation in the ecological condition of riparian habitats and management practices among farmers.

3. We used a rapid appraisal index of riparian condition developed in previous studies on the impacts of cattle on riparian habitats (Jansen & Robertson 2001a) and modified it for use in the Gippsland dairy region. Scoring of variables used in the index was based on surveys of seven reference sites in the Gippsland region. We stratified our sampling of sites according to landform (Gippsland Plain=flat sites; Strezlecki Ranges=hilly sites) and broad management categories for riparian habitats encountered in the region (grazed, planted after fencing, fenced remnants of riparian vegetation).

4. The farm sizes, herd numbers and stocking rates of the 28 farms we visited for interviews were typical of dairy farms in Gippsland. Farms visited were typically small (most <200ha) with herd sizes that result in mean annual stocking rates of 25-73 $DSE.ha^{-1}annum^{-1}$. In most cases farmers used 100% of their properties for pasture production to support their milking herds. Most paddocks that contained streambank habitat were managed in the same way as other paddocks, except when they were very wet, when farmers removed stock.

5. Eighty-four percent of farmers interviewed had fenced-off some portion of their riparian areas from stock. The most common reason given for fencing was for stock management purposes. Nevertheless, the very active Landcare groups in the region

point to the number of dairy farmers with a motivation to conserve streambanks and biodiversity be fencing and replanting riparian habitats.

6. The current condition of riparian sites on dairy farms in south and west Gippsland is generally very poor, with no significant differences between sites in the flat terrain of the Gippsland Plain or hilly terrain of the Strezlecki Ranges. Riparian sites in paddocks that are used for livestock grazing of milking herds are generally in very poor condition. Sites in best condition are those in patches of remnant riparian forest that had been fenced-off to prevent stock access.

7. In-stream metabolism (often used as an ecosystem measure of river "health") was measured at a sub-set of 20 sites. Metabolism showed a gradient of values over the sites and was dominated by high rates of respiration; probably a function of elevated nutrient status. The condition index scores from the rapid assessments were correlated to in-stream primary production and respiration. This indicates a relationship between riparian condition and shows how rapid measures (index coefficient) are valuable surrogate measures of in-stream condition.

8. Riparian sites that had been fenced-off and replanted (=planted sites in our terminology) generally received a low condition index score owing to the short time that had elapsed since site works. There was a significant, positive linear relationship between site condition and the time since rehabilitation work was completed, with more than 16 years required for planted sites to attain an excellent condition index score.

9. There was no statistically significant relationship between stocking rate and the index of riparian condition on dairy farms in Gippsland and there was only a very weak negative relationship between cowpat counts (our index of livestock activity in the riparian zone) and condition scores. There was also no evidence that the positioning of alternative watering points on dairy farms in Gippsland had resulted in better condition index scores for riparian sites. Thus, two generic best practices recommended for riparian habitats - rotations of stock in riparian paddocks and the provision of off-stream watering points will not be effective in rehabilitating riparian habitats under the current stocking rates used on Gippsland dairy farms.

10. Our results also indicated that condition index values for fenced remnants of riparian vegetation reached a plateau when vegetation was 30 metres wide on either side of a stream. Thus it appears that such a width is required in the Gippsland dairy region to obtain an excellent condition score.

11. The following recommendations regarding best practice arise directly from the results of this study.

- Rehabilitation of degraded riparian sites currently subject to direct access by dairy cows is best achieved by fencing-off riparian areas so they are inaccessible to cattle. Other recommended practices such as the provision of off-stream watering points and 'spelling' of riparian paddocks are not effective on dairy farms in Gippsland under current stocking rates.
- In order to restore riparian sites to somewhere near excellent condition (as measured by our index of riparian condition) fenced riparian strips will need to be at least 30 metres wide on either side of a stream or river.
- When siting new dairy sheds on farms, they should be as far away from streams as possible.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

FIGURES

TABLES