



## New Zealand's threatened bryophytes: Conservation efforts

ALLAN J. FIFE<sup>1</sup>, DAVID GLENNY<sup>1</sup>, JESSICA E. BEEVER<sup>2</sup>, JOHN E. BRAGGINS<sup>3</sup>, PATRICK J. BROWNSEY<sup>4</sup>, MATTHEW A.M. RENNER<sup>3</sup> & ROD HITCHMOUGH<sup>5</sup>

<sup>1</sup>Landcare Research, PO Box 40, Lincoln 7640, New Zealand; email: fifea@landcareresearch.co.nz

<sup>2</sup>Landcare Research, Private Bag 92170, Auckland 1142, New Zealand

<sup>3</sup>Herbarium, The Auckland War Memorial Museum, Private Bag 92018, Auckland 1142, New Zealand

<sup>4</sup>Museum of New Zealand Te Papa Tongarewa, PO Box 467, Wellington 6140, New Zealand

<sup>5</sup>Ecosystems and Species Unit, PO Box 10420, Department of Conservation, Wellington 6143, New Zealand

The New Zealand bryophyte flora is highly diverse with latest figures for the number of formally described species recognized being 534 mosses, 616 liverworts and 13 hornworts. A relatively high percentage of the bryophyte species is considered to be endemic (c. 21% of mosses, c. 50% of hepatics, and c. 60% of hornworts). Additionally, the New Zealand landscape is highly modified, particularly in lowland areas and in eastern portions of the two main islands. There, lowland forests and grasslands have largely been converted to pastoral and agricultural land uses with a consequent reduction of native plant diversity. These and other factors have led in recent years to an increased conservation focus on New Zealand's rarer bryophytes. While bryophyte conservation efforts to date have focused on documentation, some tentative moves have been made towards active management of our rarest taxa.

Under the auspices of the New Zealand Department of Conservation (hereafter DOC), a "specialist panel" of bryologists has met on a roughly three-yearly basis since 1992 to rank poorly documented and rare bryophyte taxa using a nationally developed "New Zealand Threat Classification System". Since 1992 this ranking of bryophytes has gone through four iterations, with the most recent commencing in May 2009 but not yet wholly completed. The current bryophyte specialist panel (hereafter "BSP") consists of J.E. Beever, J.E. Braggins, P.J. Brownsey, A.J. Fife, D.G. Glenny, M.A.M. Renner, and R. Hitchmough (convenor, DOC).

In its current form the New Zealand Threat Classification System (hereafter "NZTCS") uses criteria outlined by Townsend *et al.* (2008); this classification system parallels the IUCN Red List conservation status listing and ranking system, with criteria developed to suit particular New Zealand requirements (e.g. fine-scale local endemism in many groups). The categories defined by Townsend *et al.* (2008) and considered in the most recent evaluation are shown in Table 1.

**TABLE 1.** Number of New Zealand bryophytes in evaluated threat categories and non-evaluated Data Deficient categories for the 2009 New Zealand Threat Classification System list (as per draft of March 2010).

| Overriding category | Primary category | Secondary category        | Mosses | Hepatics and hornworts |
|---------------------|------------------|---------------------------|--------|------------------------|
| Evaluated           | Extinct          | -                         | 0      | 0                      |
|                     | Threatened       | Nationally Critical       | 14     | 15                     |
|                     | Threatened       | Nationally Endangered     | 3      | 6                      |
|                     | Threatened       | Nationally Vulnerable     | 1      | 3                      |
|                     | At Risk          | Mostly Naturally Uncommon | 48     | 77                     |
|                     | Not Threatened   | -                         | c. 447 | c. 409                 |
| Not evaluated       | Data Deficient   | -                         | 21     | 119                    |