Prescribed Burning Based on Range Condition in the Okavango Delta Ramsar Site in Botswana, Africa

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The Okavango Delta located in north western Botswana in southern Africa is one of the world's largest remaining inland wetland ecosystems that is protected under the Ramsar Convention . The frequency and severity of fires are perceived to be a threat to the conservation and wise use of the Delta and provided the motivation for the formulation of a fire management plan for the area . The vegetation in the Ramsar Site comprises the *Permanent* and *Seasonal Swamps* and *Burkea , Mopane* and *Acacia Woodlands* . The development of simple and practical quantitative criteria describing the ecological condition of the vegetation that could be used to identify areas that should be considered for prescribed burning was an important requirement for the fire management plan and comprised the following guidelines :

1 .Burning is ecologically acceptable if the grass sward is in a climax and/or sub-climax stage dominated by Decreaser and/or Increaser I grass species as a means of maintaining the biodiversity and potential of the grass sward to produce grazing for both domestic livestock and wildlife . When in this ecological condition the grass sward is resistant to the negative effects of this extreme form of defoliation . Conversely burning should not be applied when the grass sward is in a pioneer condition dominated by Increaser II grass species in order to allow it to develop to a more productive and species diverse stage dominated by Decreaser grass species (Trollope , 1999) .

2 .Burning is ecologically acceptable , if the grass sward is in a moribund and/or unpalatable condition , as a means of restoring the vigour of the grass sward and allowing new nutritious regrowth to occur . Field experience indicates that when the standing crop of grass≥4 000 kg/ha in African grasslands and savannas then the grass sward has become moribund and/or unacceptable to grazing animals and needs to be defoliated by burning or some other means (Trollope , 1999) .

While no techniques were available for assessing the condition of the *Permanent Swamps* results of field surveys in the other vegetation types showed that the *Seasonal Swamps* and portions of the *Burkea Woodlands* were the only vegetation units that should be considered for controlled burning , based on the proportion of Decreaser and/or Increaser I grass species . In terms of grass fuel loads , only the *Seasonal Swamps* had extensive areas where the grass sward was in a moribund condition and should be considered for controlled burning .

An assessment of the *Permanent Swamps* dominated by extensive communities of *Cyperus papyrus* (papyrus) and *Phragmites spp* . (reeds) indicated they had extremely high fuel loads capable of generating high intensity fires but were highly resistant to burning because the growing points of the plants are either inundated by water or are growing in moist soil . While it can be accepted that fire is a natural and necessary factor of the environment in this vegetation type , research is necessary to provide information for formulating a fire regime suitable for management purposes in this plant community .

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