APPENDIX S2 : Nitrogen budget for the plant

To understand how much nitrogen *Sarracenia purpurea* can really get from prey decomposition, we can use the available data and our model to compare the effects of the input of nitrogen from the different sources available to the plant.

(1) We have found that the capture rate varies a great deal from leaf to leaf in the same field (from θ_A = 1.08 to 63.36 mg of carbon per liter and per day; appendix 1). This is not surprising since it is known that the capture rate varies with leaf age, height, and exposure (Cresswell 1991, Miller and Kneitel 2005) and prey availability (Wolfe 1981). Based on our model equations and numerical values we have collected (Table 1, appendix 1), we can calculate the proportion of nitrogen that is collected by the plant from the detritus: $N_{\%} = (yN^{*}/\theta_A\alpha)*100 = 10.3\%$. Thus, the quantity of nitrogen potentially captured by the plant through prey decomposition of organic detritus ($\theta_A N_{\%}/\alpha$) varies from 0.0167 to 0.985 mg of nitrogen per liter and per day.

(2) *Sarracenia purpurea* grows in bogs and other nutrient-poor soils that receive inorganic nutrients inputs mostly through precipitation (Siegel and Glaser 1987, Juniper et al. 1989) collected by its leaf (Ellison and Gotelli 2002). Based on estimation of NO_3- and NH_4^+ concentration in atmospheric deposition (Ollinger et al. 1993) we have found estimation for nitrogen input into the pitcher through precipitation to be between 0.06 and 0.08 mg of nitrogen per liter and per day (appendix 1).

(3) It has been shown that bacterial dinitrogen fixation could occur in the leaf of *S. purpurea* and may represent a substantial source of nitrogen to the plant (Prankevicius and Cameron 1991). These authors found that the maximum nitrogen yield in a leaf was 20.37 mg of N fixed per liter and per day (appendix 1). This nitrogen fixation will only indirectly benefit the plant, through nitrogen enrichment via bacterial excretion and mortality. It is difficult to estimate this indirect effect but it can be used as a max value. Our data show that the flux of nitrogen from detritus to bacteria compartments is about 100 times lower than this value ($u_B BD/\alpha = (0.00105*371.25*5)/6.62$ = 0.29 mg of N fixed per liter and per day). Prankevicius and Cameron's value seems anormally high and must thus be interpreted carefully but illustrates the potential of nitrogen production by bacterial dinitrogen fixation.

(4) Individuals of *Sarracenia purpurea* probably receive very little nitrogen through their roots systems (Juniper et al. 1989, Ellison and Gotelli 2002). The utilization of *N* source in the soil is greatly dependent on pH and the kind of environments where this plant grows, which are naturally very acidic. In the sandy, low pH (mean of 4.7, sd = 0.7) soils of N. Florida, pitcher plant roots are very reduced and appear to serve primarily for support.

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