$$log(r_f(z,\theta)) = \beta_{0,r_f,i} + \beta_{z,r_f} * z +$$
$$\beta_{r_f,theta_t,mean} * \theta_{t,mean,i} + \beta_{r_f,\theta_t,seas} * \theta_{t,seas,i} +$$
$$\beta_{r_f,\theta_p,total} * \theta_{p,total,i} + \beta_{r_f,\theta_p,seas} * \theta_{p,seas,i} +$$
$$\beta_{r_f,\theta_{s2},mean} * \theta_{s2,mean,i} + \beta_{r_f,\theta_{s2},seas} * \theta_{s2,seas,i} +$$
$$\beta_{r_f,\theta_t \times z,mean} * \theta_{t,mean,i} * z + \beta_{r_f,\theta_t \times z,seas} * \theta_{t,seas,i} * z +$$
$$\beta_{r_f,\theta_p \times z,total} * \theta_{p,total,i} * z + \beta_{r_f,\theta_p \times z,seas} * theta_{p,seas,i} * z +$$
$$\beta_{r_f,\theta_{s2} \times z,mean} * \theta_{s2,mean,i} * z + \beta_{r_f,\theta_{s2} \times z,seas} * \theta_{s2,seas,i} +$$
$$\beta_{r_f,native} * g(i) + \beta_{r_f,native \times z} * g(i) * z.$$

$$\mu_G(z,\theta) = \beta_{0,\mu_G,i} + \beta_{\mu_G,z} * z +$$
$$f_{t2}(\theta_{t,seas,i}, z) + f_{t2}(\theta_{p,total,i}, z) +$$
$$f_{t2}(\theta_{p,seas,i}, z) + f_s(\theta_{s2,mean,i}) + f_s(\theta_{s1,mean,i}) +$$
$$\beta_{\mu_G,\theta_t,mean} * \theta_{t,mean,i} + \beta_{\mu_G,\theta_{s2},seas} * \theta_{s2,seas,i} +$$
$$\beta_{\mu_G,\theta_{s1},seas} * \theta_{s1,seas,i} +$$
$$\beta_{\mu_G,\theta_t \times z,mean} * \theta_{t,mean,i} * z +$$
$$\beta_{\mu_G,theta_{s1} \times z,seas} * \theta_{s1,seas,i} * z +$$
$$\beta_{\mu_G,theta_{s2} \times z,seas} * \theta_{s2,seas,i} * z,$$

$$Logit(s_a(z,\theta)) = \beta_{0,s,i} + \beta_{s,z} * z +$$
$$\beta_{s,\theta_t,dry} * \theta_{t,dry,i} + \beta_{s,\theta_t,wet} * \theta_{t,wet,i} +$$
$$\beta_{s,\theta_p,dry} * \theta_{p,dry,i} + \beta_{s,\theta_p,wet} * \theta_{p,wet,i} +$$
$$\beta_{s,\theta_{s2},dry} * \theta_{s2,dry,i} + \beta_{s,\theta_{s2},wet} * \theta_{s2,wet,i} +$$
$$\beta_{s,\theta_t \times z,dry} * \theta_{t,dry,i} * z + \beta_{s,\theta_t \times z,wet} * \theta_{t,wet,i} * z +$$
$$\beta_{s,\theta_p \times z,dry} * \theta_{p,dry,i} * z + \beta_{s,\theta_p \times z,wet} * \theta_{p,wet,i} * z +$$
$$\beta_{s,\theta_{s2} \times z,dry} * \theta_{s2,dry,i} * z + \beta_{s,\theta_{s2} \times z,wet} * \theta_{s2,wet,i} * z +$$
$$\beta_{s,native} * g(i) + \beta_{s,native \times z} * g(i) * z,$$

$$Logit(p_f(z,\theta)) = \beta_{0,p_f,i} + \beta_{z,p_f} * z +$$
$$f_s(\theta_{t,mean,i}) + f_s(\theta_{p,total,i}) +$$
$$\beta_{p_f,\theta_t,seas} * \theta_{t,seas,i} +$$
$$\beta_{p_f,\theta_p,seaS} * \theta_{p,seas,i} +$$
$$\beta_{p_f,\theta_{s2},mean} * \theta_{s2,mean,i} + \beta_{p_f,\theta_{s2},seas} * \theta_{s2,seas,i} +$$
$$\beta_{p_f,\theta_t \times z,seas} * \theta_{t,seas,i} * z + \beta_{p_f,\theta_p \times z,seas} * \theta_{p,seas,i} * z +$$
$$\beta_{p_f,\theta_{s2} \times z,mean} * \theta_{s2,mean,i} * z + \beta_{p_f,\theta_{s2} \times z,seas} * \theta_{s2,seas,i} * Z.$$