function dydt = MR\_model\_four\_V5(~,y,r,k,aZ,aF,aW,hZ,hF,hW,eZ,eF,eW,dZ,dF,dW,dP,m)

dydt = zeros(size(y));

% variables

P = y(1);

Z = y(2);

F = y(3);

W = y(4);

dydt(1) = r\*P\*(1 - P/k) - (aZ\*P\*Z^(1+m))/(1+aZ\*hZ\*P\*Z^m)-dP\*P;

dydt(2) = (eZ\*aZ\*P\*Z^(1+m))/(1+aZ\*hZ\*P\*Z^m)-(aF\*Z\*F^(1+m))/(1+aF\*hF\*Z\*F^m)-dZ\*Z;

dydt(3) = (eF\*aF\*Z\*F^(1+m))/(1+aF\*hF\*Z\*F^m)-(aW\*F\*W^(1+m))/(1+aW\*hW\*F\*W^m)-dF\*F;

dydt(4) = (eW\*aW\*F\*W^(1+m))/(1+aW\*hW\*F\*W^m)-dW\*W;