Each of us can be thankful that Mother Nature is a progressive old lady. She always keeps one rule in mind—improvement. And in her ability at first aid to the land lies our hope. On a denuded range, or even in a plowed field, she makes a new start each season. Our obligation is to aid nature’s renewal processes to attain sustained yields of forage, timber, game animals, cultivated crops, and all the other products of the soil that contribute to our individual and collective welfare.

How can we aid this progressive lady? Most of the answer lies in learning and using the rules of biology for the benefit of mankind. If we ask, “Who, me?” the answer is, “Yes, you.” Whether we are ranchers, technicians, or just plain citizens, we are individuals in the international sphere dependent on continued high production on the land as well as in the factory. In fact, our industrial production would cease if our biological management failed to work.

On the range, biotic relationships are not so simple that we can relax and say, “If it rains, the grass will grow, the livestock will prosper, and we can make more money.” The range is complicated, and dynamic. Its vegetation, which is the crop the rancher sells, evolves in harmony with the forces and factors which make up the environment. If we disturb by just a little the balance of force against force in nature, a cycle of changes and responses begins that may span a lifetime. Herein lies the application of ecological knowledge to range management. If there were no such thing as change in response to a cause, man would waste his efforts in attempting to control the environment for the purpose of preserving the range resource. Let’s be technical for a moment.

Action in nature is threefold: the organisms, the habitat, and the physical factors all act and react upon one another. The result is a struggle for existence among organisms. In this struggle, many processes are involved, including migration, invasion, retrogression, and competition.

Dr. David F. Costello
Let's look at one of these—competition. When organisms compete they make demands for the same supplies: light, moisture, and nutrients. In plant competition, the species that makes the greatest demand is the one that succeeds. When a cow eats a grass plant she gives the adjoining thistle, which she leaves untouched, a competitive advantage. Multiply this a million times on a given area and you have the beginning of change in range condition. Start the range condition downward in trend on a million pastures and you have decrease in our livelihood, and our authority, in the world community. A lot depends on how we care for each little acre of ground.

And how can we care for that acre of ground? The answer is: by knowing its biological processes, and applying nature’s rules for its maintenance. Each acre, each pasture, each ranch in our vast range is a problem in itself. And each unit of range, wherever it may be, is under the control of some person. In that person lies a primary responsibility. He knows, or should know, his own little parcel of land better than any other person, because he lives with it, and uses it year after year.

The individual owner or administrator usually needs help in knowing his land and the processes that operate upon it. This is a job for the technician or researcher, whose task it is to discover biological rules and relationships, and from his knowledge of these to suggest ways in which causes may be applied to produce desired effects.

Both the producer and the technician need help and understanding from the plain citizen, who is the ultimate consumer of products from the land. The plain citizen, in particular, must insist that proper use be made of the land on which we all depend. The attitudes and actions of all three largely determine how well we can compete in the struggle for existence among nations. Mutual assistance, understanding, and positive action are needed to control our environment and our destiny. It is a job for all of us.

Man is the greatest of the biological factors. Through his increasing knowledge of ecology, he has within himself the power to act on his environment for his own greatest good. He will have to apply that knowledge, not through edict, arbitrary decision, or economic or political force, but within the limits of the natural law, if he is to succeed.—David F. Costello, Rocky Mountain Forest and Range Experiment Station, U. S. Forest Service, Fort Collins, Colorado.