Intermountain Aquatics Inc. – Think Habitat!

Intermountain Aquatics Inc. (IMA) has a growing reputation for successful stream and wetland restoration across the western United States but many landowners are less familiar with our upland restoration work particularly in grassland and sagebrush steppe habitats. Some of this work is incidental to aquatic restoration projects, but most is focused on client goals to enhance hunting opportunities or comply with enrollment obligations under government conservation programs (e.g. Conservation Reserve Program [CRP]).

Sagebrush steppe is a vast complex of sagebrush, grasses and forbs that blankets much of the arid west and anchors many of our wildlife populations. Conversion to agriculture, energy development, mining, land development and climate change continue to threaten these habitats and it's estimated that less than 5% remains in pristine condition. The trend is concerning given that sagebrush steppe supports most of our game species including the imperiled Columbian sharp-tailed grouse and sage grouse as well as mule deer, elk and pronghorn antelope. Many non-game species including several songbirds are sagebrush obligates meaning they require sagebrush to complete some part of their life cycle. The most productive pheasant and Hungarian partridge hunting also occurs in these habitats and most of the puddle ducks we waterfowlers chase hatch from uplands not to mention that rangelands are the foundation of the western livestock industry.

Unfortunately the sea of sagebrush steppe is unraveling ecologically, triggered originally by severe overgrazing (mostly by sheep) in the late 1800s and early 20th century and continuing today with changes in climate, fire and the invasion of noxious weeds. The silver lining has fortunately been a renewed focus to understand, conserve and restore these habitats.

Restoration outcomes fall on a spectrum from relatively predictable and successful prior conversions of agriculture back to grassland or sagebrush steppe to very unpredictable and often failed restorations of denuded cheatgrass - infested rangelands. The later scenario is often characterized by vestigial sagebrush and cheatgrass or other noxious weeds replacing native bunchgrasses and forbs. Restoration following fire is also becoming more frequent and results vary widely depending on the vegetation community and condition pre-fire, burn severity and natural moisture regimes in the years immediately following the burn. Large scale restoration success has been widely achieved under agricultural scenarios through government farm programs like CRP; many qualifying landowners are still taking advantage of CRP today because upland restoration remains a good long term investment for both sportsmen and ranchers.

Regardless of project complexity, one needs to adhere to the "three Ps" - *Planning, Persistence* and *Patience* when embarking on an upland restoration. Even with rainfall *Planning* is a key first step. Planted vegetation needs to be matched with natural site potential. On top of moisture, weed pressure, soils, slope, aspect and landuse are all factors to consider when designing and installing the seedmix; that's where *Persistence* and *Patience* comes in. Preparing the site for seeding may take several years with multiple efforts at weed control and seedbed preparation. After drought, weed competition is the single biggest factor contributing to failure. Depending on the site this can be a multi-year process,

typically involving herbicides, tillage, fire, grazing management or even biological weed control. After the seedbed is "cleaned" of weeds proper seed installation is the next step. Traditional seeding equipment is not set up to handle a diverse mix of native species and will usually plant seeds too deep resulting in poor germination. Specialized equipment designed to run on more rugged terrain has been developed to handle native seed and place it shallower in the soil with better results. Timing is also critical to catch natural moisture. We prefer a dormant fall seeding but early spring seedings can also be effective. With a little luck the seeding will be covered with lots of snow and then receive periodic spring rains resulting in good seedling establishment. One should expect at least 3 – 5 years for maximum stand development, and weeds will need to be managed carefully during that time. Under almost all scenarios fertilizer is not recommended and usually favors weeds over the more slowly developing natives. Once a stand is established it is relatively maintenance free and should offer years of function and enjoyment.

Consider IMA to help plan and implement your next upland project. We can help identify project goals and limiting factors, secure cost share assistance and manage your restoration from start to finish. IMA is staffed with experienced and qualified professionals equipped with the latest seeding and revegetation equipment to ensure positive outcomes.

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