Figure 151—Aframed landscape view is shown with the topic of a farmstead. Buildings are used to provide scale as is the fence. Backlight (sun shining towards the camera) creates a halo effect around each tree below the farm to give a three-dimensional effect.

Perspective or scale is provided by objects of known size; for example, the farm buildings in figure 151. In figure 148B, the fence line provided both an angle and a sense of perspective. Figure 149 could have been enhanced by an object in the meadow to indicate how wide it is.

Change in camera focal length is another method for dealing with composition and emphasizing a topic. Figure 152 compares two focal lengths and their effect on emphasis of ponderosa pine savanna. Figure 153 illustrates change in topic with change in focal length. The topic changes from an island in a river to a sweeping bend in the river with an island.

Composition may be summarized as follows: define a topic (What do I want to show?), apply the one-SAT concept (one side, one angle, one-third), use pattern to emphasize the topic, and provide perspective for the topic.

Light

Light is abused more often than used. It may be used to highlight objects, put a three-dimensional effect into a landscape, create unsolvable problems with shadows, and wreak havoc with a topic when sky and ground exposure are being reconciled. Abuse of light results from inattention to exposure and lack of time to photograph in suitable lighting conditions.

Sun may be used to enhance a three-dimensional effect in a two-dimensional photograph (figs. 151 and 154). Sun from behind the topic, particularly vegetation, tends to shine on the outside leaves while making a shadow in back. This forms a “halo” effect setting off individual plants and simulating a three-dimensional effect. Figure 155 illustrates the effect in grass, shrubs, and trees. Notice how the trees stand out as individuals in figure 151. The halo effect is summarized in the proverb of “photograph before 10 and after 3” when the Sun is low enough to create a good halo.

Text continues on page 319.

Figure 152—Effect of focal length is important in photograph composition and topic identification: (**A**) 50-mm lens on a 35-mm camera 10 m from the meter board emphasizing savanna ponderosa pine, and (**B**) 35-mm lens on the 35-mm camera from the same camera location but the meter board has been moved to 7 m making it the same size as in A. Scale of the grassland has been increased. Which picture more honestly illustrates forest savanna?

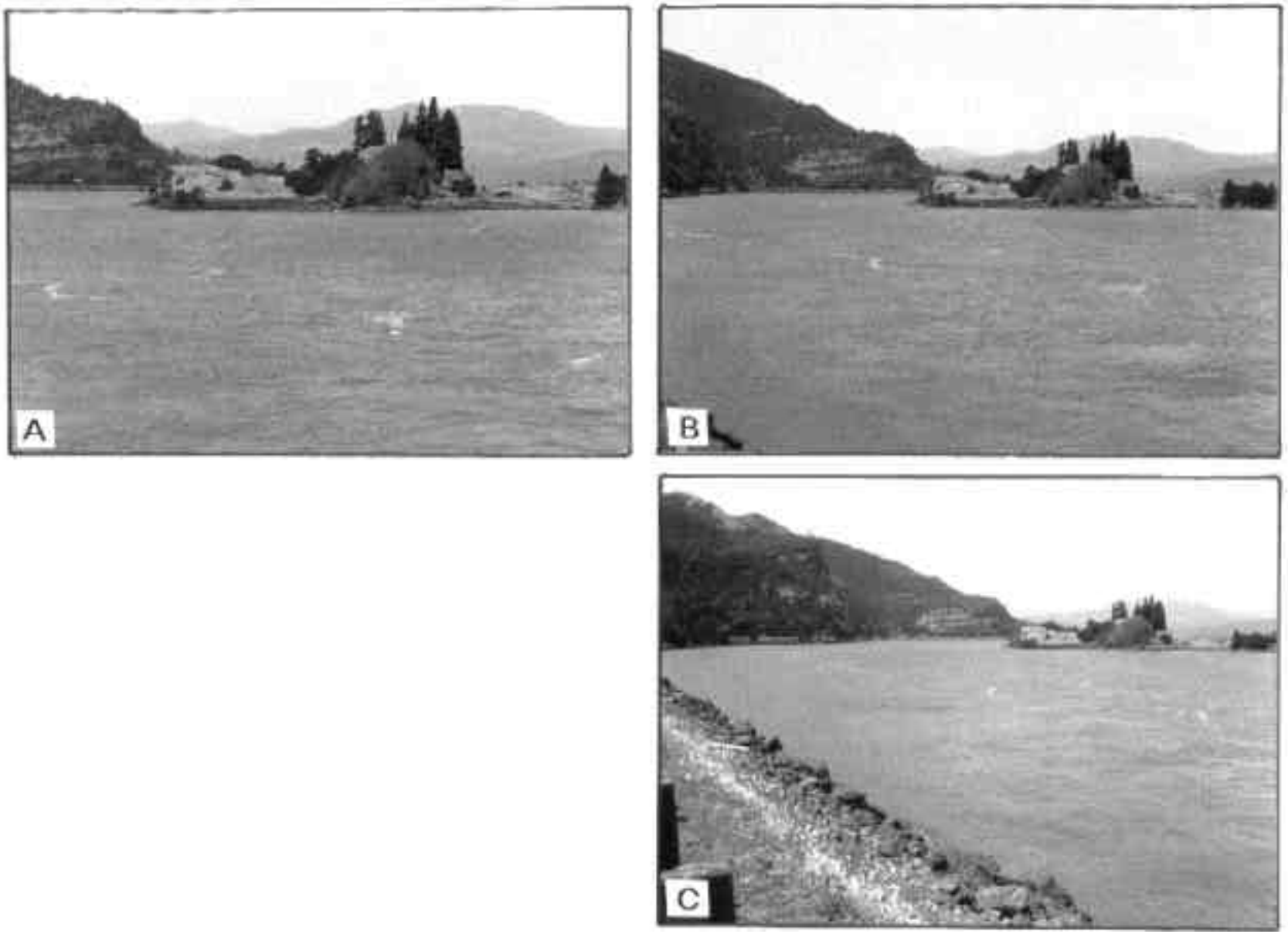

Figure 153— A second use of focal length is to change perspective in a photograph. The setting is an island in the Columbia River. Focal lengths were (**A**) 70-mm, (**B**) 50-mm, and (**C**) 35-mm on a 35-mm camera. In A, the island is the topic; in B, the island and river are both topics (which creates a dull photo); and in C, a sweeping curve of the river is the topic with the setting of an island.

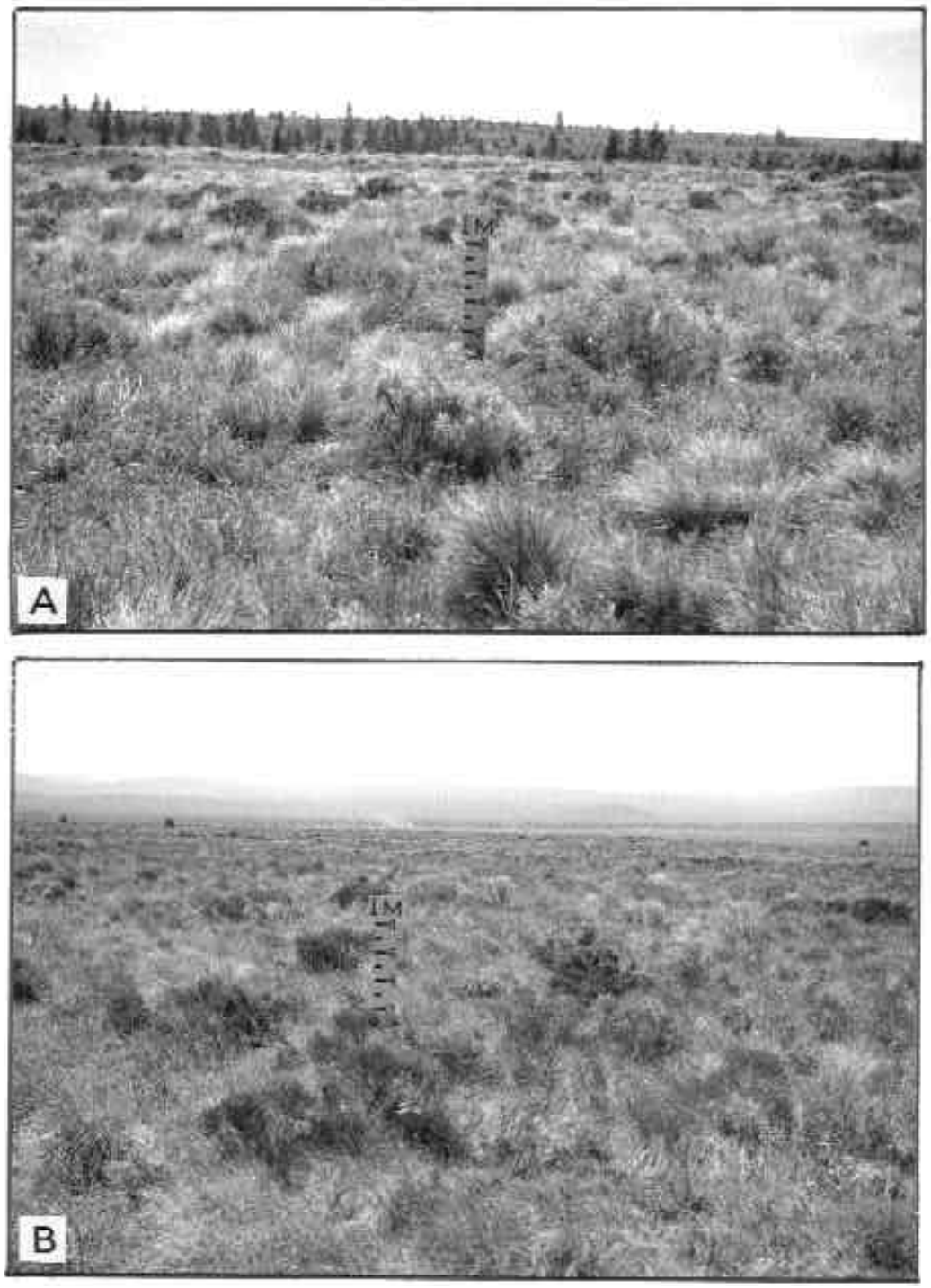

Figure 154—Light position affects emphasis on vegetation. (**A**) Photo taken into the Sun so that the subject is backlighted, which produces a “halo” around the edges and a shadow away from the Sun. The halo highlights vegetation and tends to give the picture a three-dimensional effect. An old adage says to photograph “before 10 and after 3" so that the Sun is low enough to enhance the halo effect. (**B**) The Sun is shining on the front of the vegetation (frontlight). Notice in B how the hills in the distance stand apart from each other owing to haze in the air.

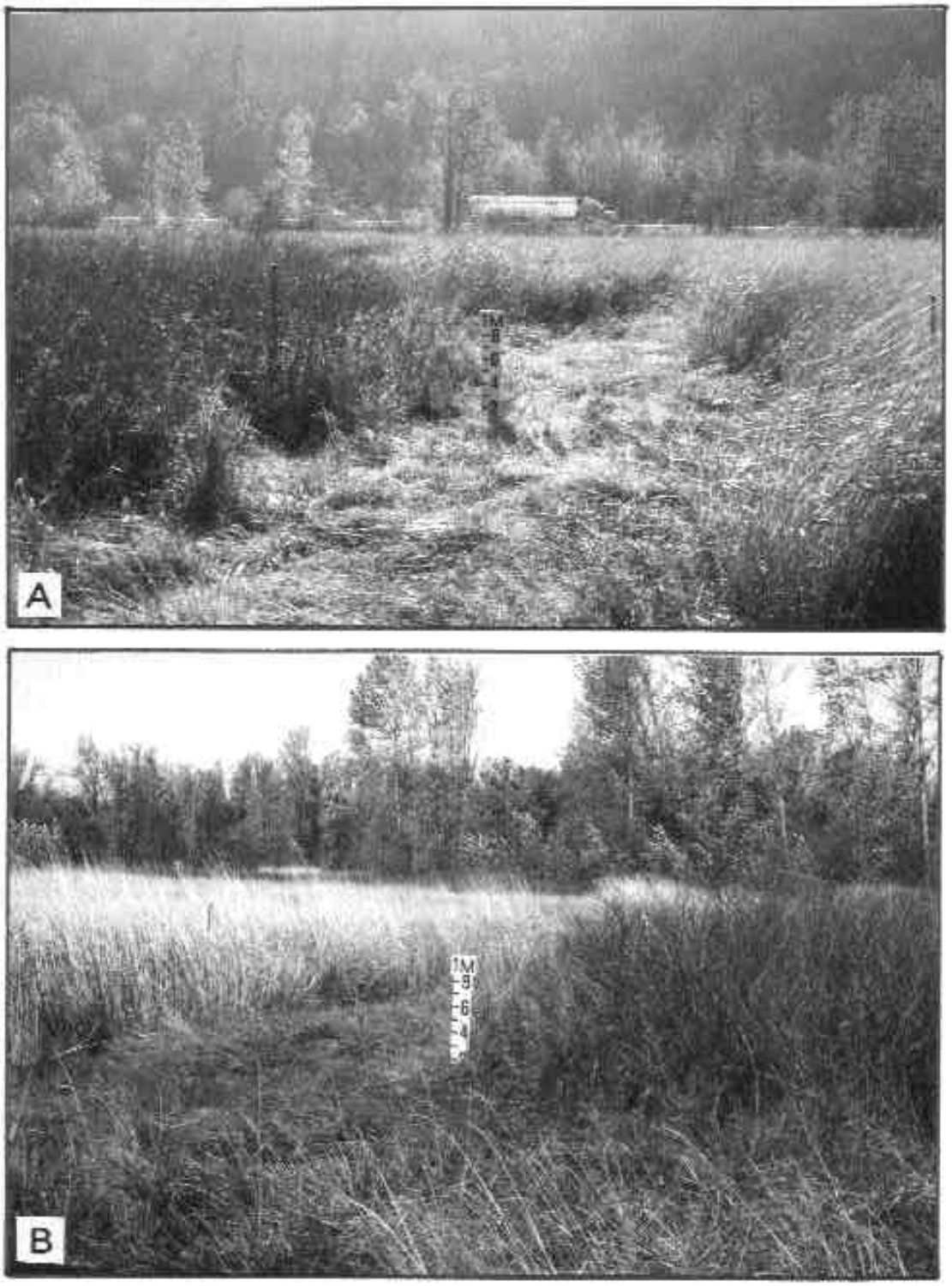

Figure 155—Asecond example of how backlight (**A**) versus frontlight (**B**) affects the highlighting of vegetation. The halo effect is well illustrated by the trees in A.

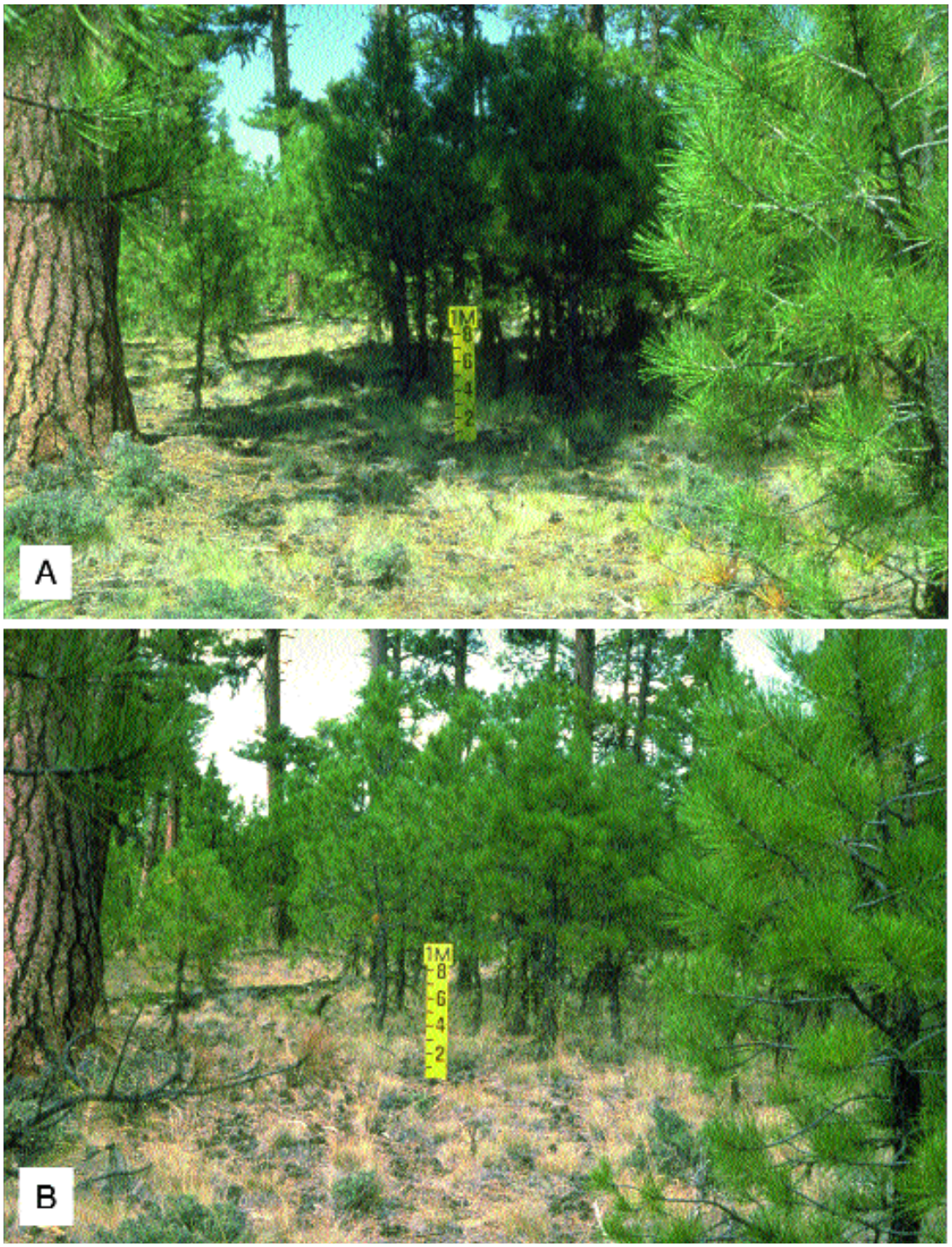

Figure 156—Overcast or full sunlight has major effects in shadow formation, a particularly serious consideration in forests. Overcast days (**B**) produce no shadows. Compare to full sunlight in **A**. With black-and-white film, the shadows may be “dodged” during the enlargement process to bring out much detail. Color film unfortunately has only about half the latitude of black-and-white film for shadows, so particular care must be taken when adjusting exposure. Slides cannot be dodged.

Sunlight compared to overcast skies has advantages and disadvantages. Overcast provides no three-dimensional effect and sunlight produces shadows. Figures 156 and 157 illustrate the disadvantages of shadows.

Camera exposure setting is a key to good use of light. Figure 147, A and B, illustrates the effects. In figure 147A, the exposure was overly influenced by the bright sky, which resulted in underexposure of the land. Determine the camera exposure for the brightest item close to the topic (sky or vegetation in full sunlight) and then for the topic or darkest item at the topic. Average the exposures. If you have any doubt, take three shots: one at the average, one an f-stop under, and one an f-stop over the average. Figures 156 and 157, however, illustrate a problem. The shadow is too dark and the sunlight on the vegetation too bright to be properly exposed, even with black-and-white film. Black-and-white film has about twice the latitude of color; color latitude is about one f-stop above and below average, and black-and-white film is about two f-stops.

Camera exposures in landscape photographs, particularly those showing areas more than 2 mi in the distance, should be set at a minimum of three f-stop settings: the light meter reading and one f-stop below and one above. When distance exceeds 2 mi, haze in the air influences the light meter to indicate less brightness than the land actually is reflecting, which causes overexposure of the land. In these cases, consider taking photos at both one and two f-stops additional exposure. Aerial photography suffers the same problem.

The effect of shadows and poor exposure in photographs may be partially corrected on prints (not slides) by dodging during enlarging. Dodging entails use of a cotton swab ½ to 2 in in diameter or a piece of light cardboard with a hole in it ½ to 2 in in diameter. Both should be very ragged around the edge to avoid creating a harsh edge in the finished print. During enlargement exposure, wave the swab above the overexposed area to cast a shadow and reduce the exposure time for that area. For underexposed areas, use the cardboard with the hole to shade most of the print and allow longer exposure to bring out details. Digital images may be enhanced by computer.

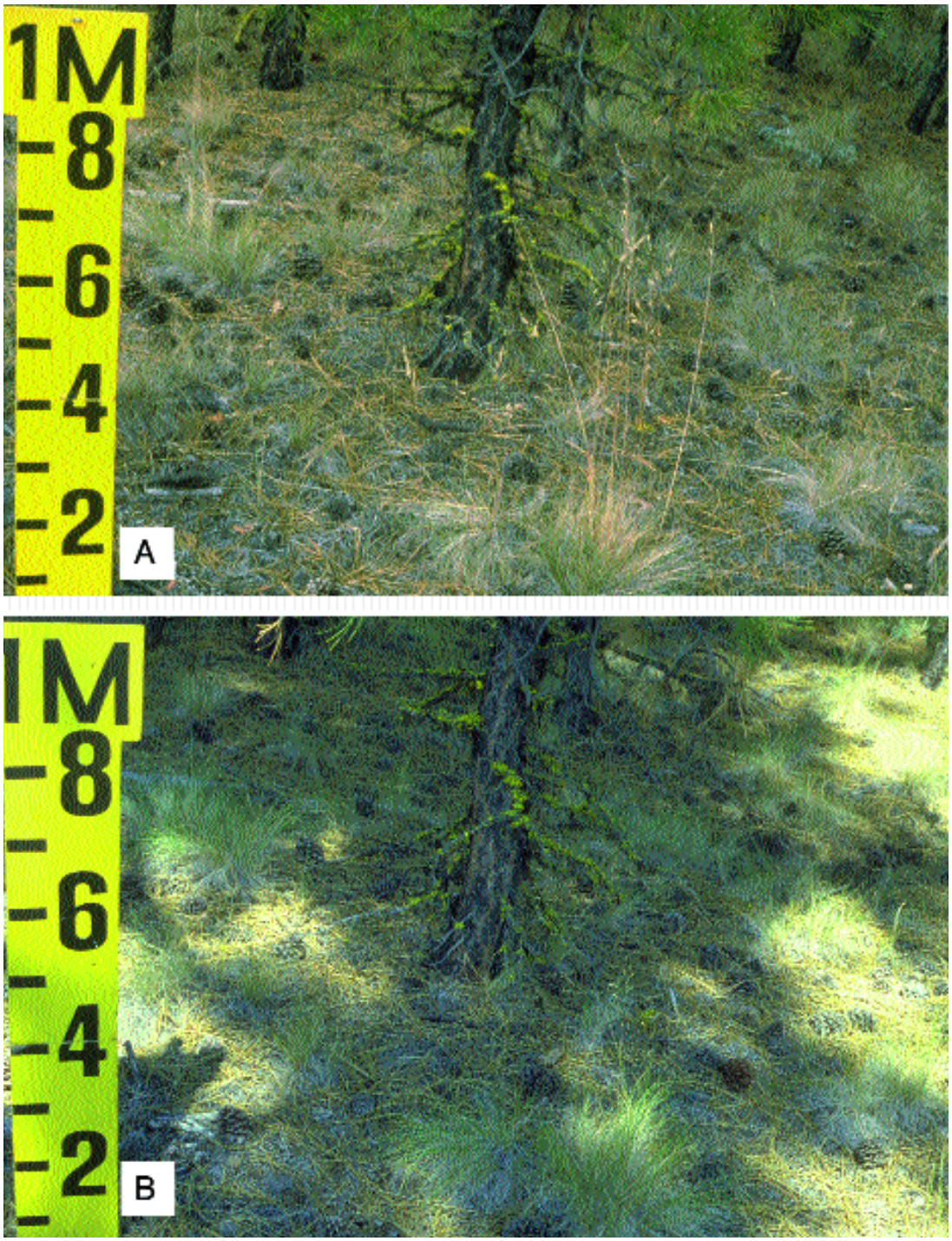

Figure 157—This example is taken at the same photo point as figure 156: (**A**) overcast and (**B**) a clear day with full sunlight.

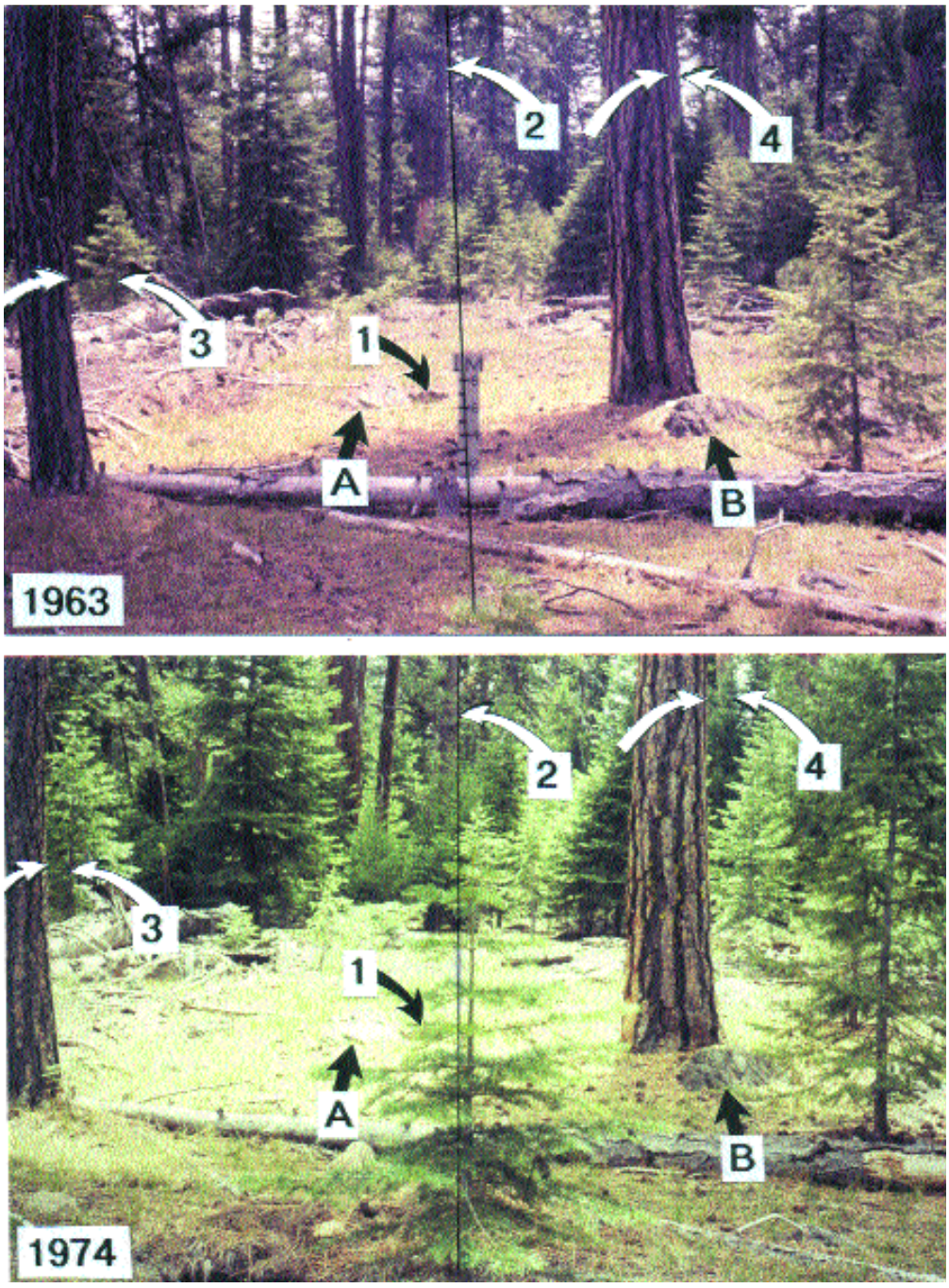

Figure 158—Relocation of photographs may be difficult when disturbance has occurred. In 1963, the centerline was established with a rock at 1 and the side of a large tree at 2. The arrows, A and B, indicate large rocks present in all photographs but not on the centerline; they help to locate the site and to validate the location. Left-side triangulation is identified by arrows at 3 showing the distance between a large tree and a small one. Right-side triangulation at 4 is identified by the side of a large foreground tree and one in the background. These triangulate the camera location. In 1974, the same items are shown without a meter board. Selection cutting occurred after 1974 with results shown in figure 159.

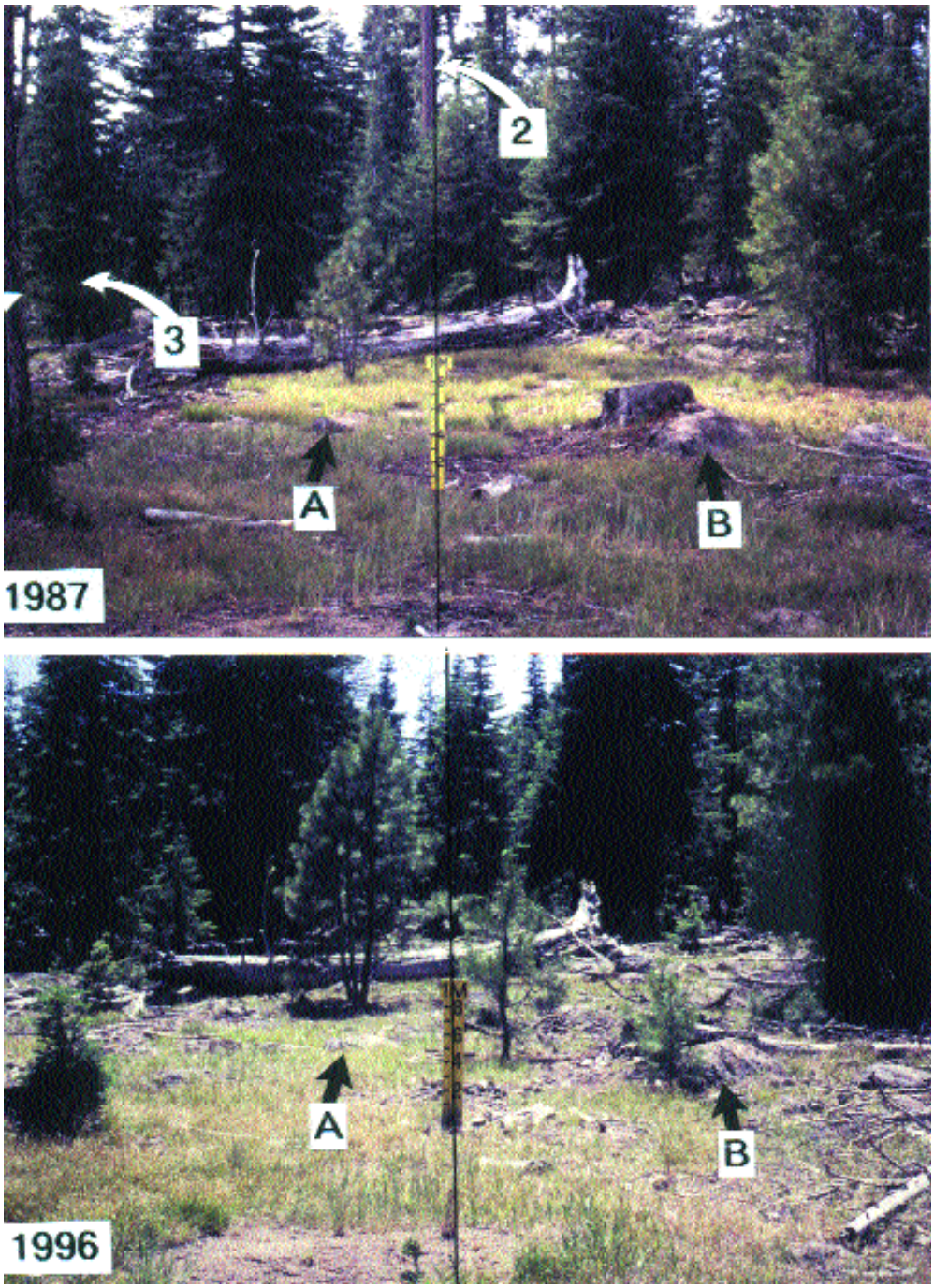

Figure 159—By 1987, selection cutting had removed the right foreground tree and the tree in the background located at 4 in figure 158, which eliminated the triangulation point. The rock at 1 was missing but the large tree in the background at 2 was present. Left-photo triangulation was still identified at 3. By 1996 after final overstory removal, all original vegetation orientation references were missing. Finding the location is facilitated by rocks at A and B, particularly B with its permanent location at the base of a tree. Precise relocation of both camera and photo points (meter board) were possible only from permanent steel stakes in the ground. Note soil hole spoils in the foreground. There has been no colonization of B or C horizon by native species in 33 years.

Relocation of Photographs

Figure 158 illustrates relocation of a camera location and photo point. The procedure is similar to that shown in figure 38. On the original photo (1963), draw a central line. A rock in the foreground and a tree in the background help establish the line. Remember, the meter board will not be in position when the site is next visited, so it cannot be used for the center line. Then establish reference points at the edges of the photograph to triangulate the camera location (fig. 158, 1963, points 3 and 4). For the1974 photo, walk forward and backward on the center line looking at the left and right sides of the picture, (3) and (4), for triangulation of the camera location. When these side identifications match numbers 3 and 4 in 1963, the camera location has been established. Note change in size of small trees between 1963 and 1974. These changes can be confusing in relocation.

Figure 159, 1987, is 13 years after figure 158 and after a first partial overstory removal. The foreground tree (item 4 in fig. 158) and the background tree are both missing so this triangulation point is no longer usable. On the left of the photo, triangulation point 3 is still available to aid location of the camera location. However, the rock at 1 has been removed and the down tree has shifted position making exact location of the center line difficult. By 1996, after the final overstory removal (fig. 159), all original reference points have been destroyed. Only rocks at arrows A and B remain. They verify that this is the same area, but do not relocate the camera location or photo point.

The moral to this story is to permanently locate, with steel stake or fencepost, both the camera location and the photo point. If disturbance such as this is anticipated, use steel stakes or ½-in-diameter rebar driven flush with the ground. Driving them flush with the ground will help prevent them from being ripped out by equipment. A metal detector will be needed to relocate the stakes.

Any kind of disturbance or vegetation growth can make relocation of photo monitoring points difficult if they are not marked by steel stakes or fenceposts. Figure 160 illustrates the effects of a wildfire where the camera location and photo point were permanently staked. The camera location could have been located approximately by aligning the meter board with a juniper in the background, the pair of junipers on the far right, and juniper branches on the left.

The advantages of using steel stakes are shown in figure 161. This kind of photo point cannot be exactly relocated by referring to general triangulation methods.

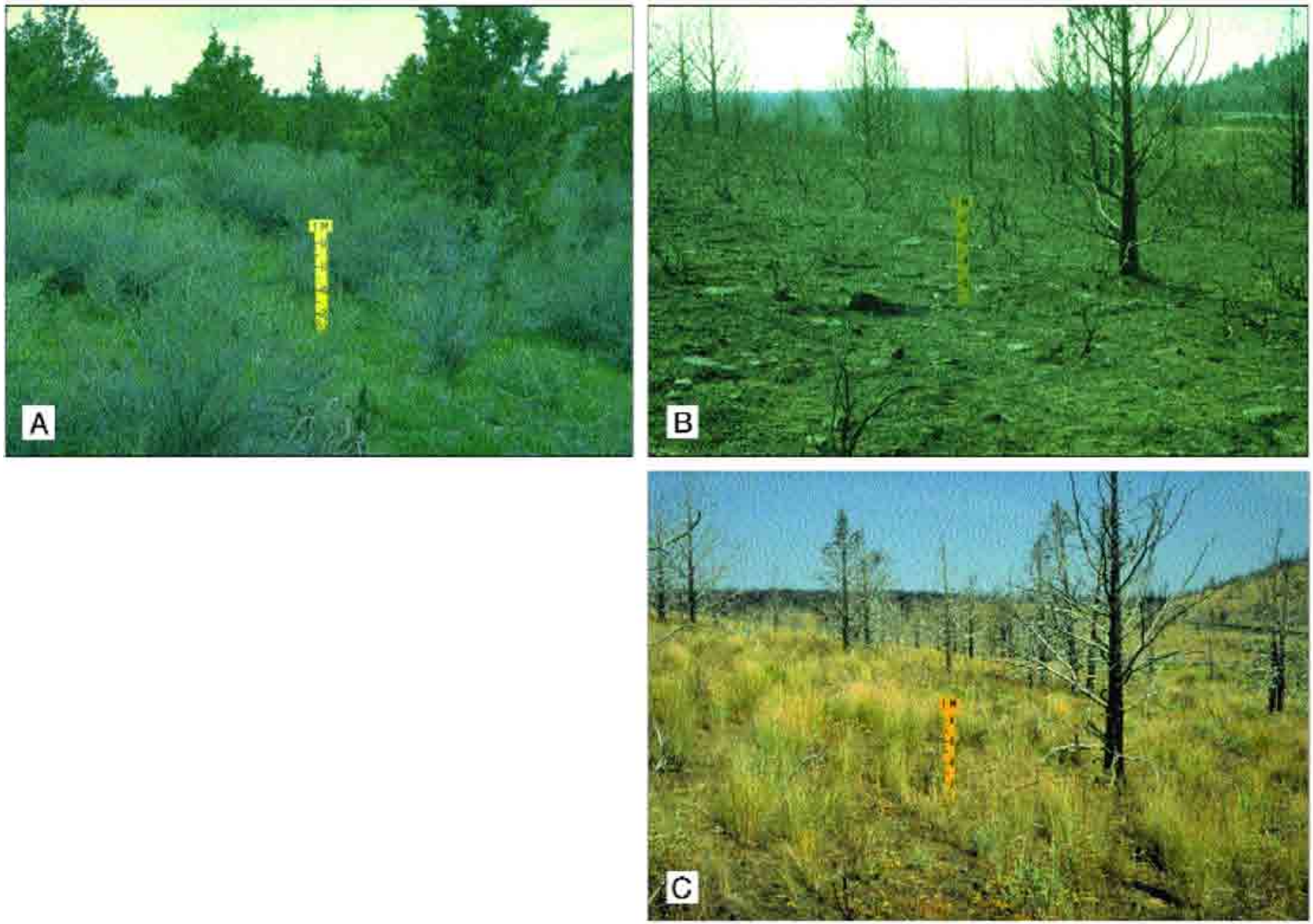

Figure 160—Rephotography of disturbed areas is illustrated. (**A**) The preburn vegetation. This sample plot was established as a data source for livestock forage rating guides. It was in the best vegetative condition for juniper/bitterbrush/Idaho fescue (*Juniperus occidentalis* Hook./*Purshia tridentata* (Pursh) DC./*Festuca idahoensis* Elmer). (**B**) Six years later the area burned by wildfire. (**C**) The area 4 years after the burn. Approximate relocation would be possible by noting the juniper directly above the meter board, the pair of junipers on the far right, and the branches of a juniper on the far left. Fortunately, the sample plot had been staked. Idaho fescue, killed by the fire, is being replaced by bluebunch wheatgrass (*Agropyron spicatum* vis. *Pseudoroegneria spicata* (Pursh) A. Love).

Figure 161—An example of photo monitoring of herbage production in a bluebunch wheatgrass community. Four years of a 25-year study are shown for the first week in August. Three things might be noted: (1) great variability in herbage production, particularly between 1981 and 1983; (2) tremendous difference in seed head production: some in 1980, abundant in 1981, none in 1982, and scattered in 1983; and (3) the difference in greenness of the grass.

Index

Regular = page where item is included in discussion
Bold = page where major discussion occurs
Italic = page with an illustration
Bold italic = page with an illustration and a major discussion

Metric and English Conversions

When you know:	Multiply by:	To find:
Millimeters (mm)	0.04	Inches
Centimeters (cm)	0.39	Inches
Decimeters (dm)	3.9	Inches
Inches (in)	2.54	Centimeters
Meters (m)	3.28	Feet
Feet (ft)	0.3	Meters
Square meters (m^2)	10.76	Square feet
Square feet (ft^2)	0.09	Square meters
Meters (m)	1.09	Yards
Kilometers (km)	0.62	Miles
Miles (mi)	1.61	Kilometers
Hectares (ha)	2.47	Acres
Acres	0.4	Hectares
Kilograms per hectare (kg/ha)	0.89	Pounds per acre
Pounds per acre (lb/acre)	1.12	Kilograms per hectare
Grams (g)	0.035	Ounces
Ounces (oz)	28.35	Grams
Celsius (°C)	(1.8 × °C) + 32	Fahrenheit
Fahrenheit (°F)	0.55(°F - 32)	Celsius

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