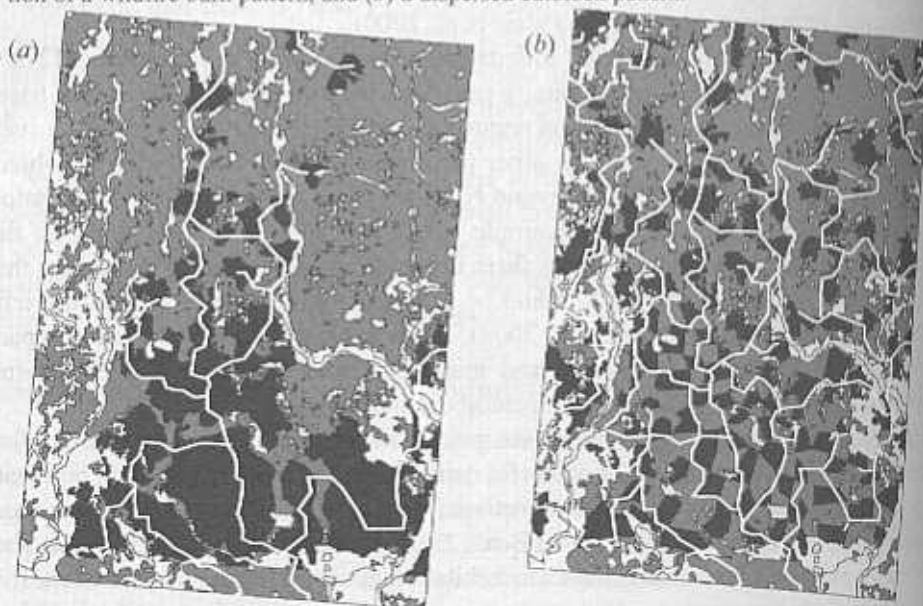


Box 12.4. Emulating a natural disturbance event.

Mistik Management Ltd. manages a 1.8 million ha boreal mixedwood Forest Management Area in west-central Saskatchewan (see Chap. 22). With the cooperation of the Saskatchewan government, Mistik planned and has completed harvesting a single 11 000 ha operating area as a single disturbance "event" during 2001 and 2002. The design was based on research on the patterns of natural fire events in the area. An outline of the final plan (scenario A in Fig. 12.3) is compared with a more traditional first pass design in scenario B. Included in the comparison is the minimum network of semi-permanent roads necessary to maintain access for future treatments and (or) harvesting. Light grey represents forest >90 years old (i.e., mature); dark grey represents forest that is younger, and non-forested areas are in white.

Fig. 12.3. The deployment of roads and cutblocks is one of the most visible results of tactical forest planning and landscape design. Scenario modelling can demonstrate the visual, habitat, and economic consequences of following alternative development templates, such as (a) emulation of a wildfire burn pattern, and (b) a dispersed cutblock pattern.



(Emulation) HARVESTING SCENARIO A

2678 ha harvested in 31 blocks
 Ave. patch size = 84 ha (range 1–1104 ha)
 Total disturbance edge = 167 km
 50 km of roads

(Traditional) HARVESTING SCENARIO B

2680 ha harvested in 129 blocks
 Ave. patch size = 21 ha (range 3–85 ha)
 Total disturbance edge = 326 km
 122 km of roads

The differences in the two scenarios are striking. Although the total area harvested is virtually identical, adjacency and block size limits typical of harvesting regulations today (scenario B) create almost twice as much disturbance edge, and 2.5 times as many roads as the natural pattern emulation design in scenario A. Adjacency limitations in scenario B also force harvesting to take place across the entire compartment, effectively fragmenting all of the unharvested mature forest. Looking ahead, scenario A gives Mistik the opportunity to recover roadbeds and "walk away" from this compartment for a number of years, or even decades, until the (less mature) wood in the north is ready for harvesting. In scenario B, activity in the compartment will be continuous for at least 20 years until all of the available wood is removed, during which time all of the roads must be maintained. Mistik expects reasonable cost savings in road construction and maintenance alone.

Box 12.4. (concluded).

The impacts of the two scenarios on wildlife and habitat are not difficult to envision. More roads certainly create travel corridors for predators, but far more important is that they allow greater access by humans, which means greater hunting pressure. Increased forest edge means less interior habitat, which means a shift in use among bird and mammal species. It is visually obvious how interior mature forest declines sharply from scenario A to scenario B. Finally, while many large ungulates may not mind sharing the landscape with us, generally the quicker timber harvesters can be in and out of an area, the more likely we are to maintain a greater variety of species.